CHEMICAL MARKETS

THE BUSINESS MAGAZINE OF CHEMICAL INDUSTRIES

VOLUME XXXI OCTOBER, 1932 NUMBER 4

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CHEMICAL MARKETS is published monthly by Chemical Markets, Inc. WILLIAMS HAYNES, *President;* H. H. ADAMS, *Vice-President;* WILLIAM F. GEORGE, *Secretary-Treasurer.*

Published on the tenth day of each month at Pittsfield, Mass., and printed for the publishers by the Sun Printing Company.

Entered as second class matter, January 1, 1928 at the Post Office at Pittsfield, Mass., under the act of March 3, 1879.

SUBSCRIPTION RATES are: domestic, two dollars fifty cents, in advance, Canadian and Foreign, three dollars a year; single copies of the current issue are twenty-five cents each, back issues fifty cents each. Notice of three weeks is necessary in order to change subscriber's address, and in notifying, kindly give both the old and the new addresses.

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EDITORIAL AND ADVERTISING OFFICES, 25 SPRUCE ST., NEW YORK, N. Y.; PUBLICATION OFFICE, PITTSFIELD, MASS.
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CHEMICAL MARKETS

VOL. XXXI OCTOBER, 1932 NO. 4.

Net Cash, F. O. B.

THE selling prices of industrial raw materials are today more susceptible to the direct influences of supply and demand than are the prices of manufactured goods for consumers' use. With an extremely inflexible demand for chemicals—a demand which the chemical producer is able to influence almost negligibly—abnormally violent price changes are necessary to effect supply and bring it in balance with national requirements.

UPON this very simple foundation of economic facts must be reared any permanently successful chemical selling policy, and at the very outset, the chemical producer must face the fact that chemical prices must always carry the burden of readjustments in the market. It is, therefore, of extreme importance to the industry that every element of price making be reduced to its simplest possible terms and relieved of all extraneous influences.

THE use of the terms of sale as a competitive weapon becomes, when seen in this light, one of the most damaging influences in chemical marketing. It is a double edged sword, extremely dangerous in any hands. At a time when the re-establishment of the economic balance is so important to every producer, drastic and concerted action by the industry is justified to remove unsound competitive practice. The very great importance of chemical commodities to practically every industry in the country demands from our consumers, cooperation to restore stability.

YET producers and consumers alike have of late been straining every nerve to upset the terms of chemical selling. Both cash discount and freight equalizations have become, to a greater extent than ever before, matters of negotiation. Never before was there a greater necessity for these terms to be uniform. A Herculean effort will be necessary to establish universally selling terms of net cash in 10 days for shipment F. O. B. the plant, but never was it more vital to the future of chemical manufacturing in America to strive towards this fair and simple ideal. Cash discounts have become price discounts disturbing to competition, rather than helpful to credits. The F. O. B. price would be a pleasant help in naturally restricting expensive chemical sales efforts to the logical territories of the producers.

1 *of these* 8

R & H NON-FLAMMABLE SOLVENTS

will meet your needs

THESE products are all stable, non-combustible, rapid-penetrating solvents with sharp boiling points. They are powerful solvents for oils, fats, waxes, gums, tar, many types of resins and organic compounds such as coumarone and rubber. All are miscible with each other or with alcohol, ether, benzene, gasoline and a number of other coal tar naphthas.

Each of these solvents has its own characteristic properties which make it useful for a specific purpose. Arranged in ascending order of their boiling points, the R & H NON-FLAMMABLE SOLVENTS are:

Dichlormethane, B. P. 39.8°C.
Dichlorethylene, B. P. 55.0°C.
Chloroform, B. P. 61.2°C.
Carbon Tetrachloride, B. P. 76.0°C.
Trichlorethylene, B. P. 86.7°C.
Perchlorethylene, B. P. 120.8° C.
Tetrachlorethane, B. P. 146.3° C.
Pentachlorethane, B. P. 159.0°C.

More data on the specifications, properties and industrial uses of these solvents are available. Our laboratories will gladly cooperate in adapting them to your specific needs.

THE ROESSLER & HASSLACHER CHEMICAL COMPANY
Incorporated
Empire State Building, 350 Fifth Avenue, New York, N. Y.

Ballot vs. Chisel Between now and January, thousands of buyers of chemicals will spend hours seeing rival salesmen, comparing prices, studying competitive bids, using high pressure methods, changing sources of supply, all with but one thought in mind—to save money.

How many will vote?

Yet the savings possible through lower taxation are much greater than any amount of "chiseling" of chemical prices.

The political preoccupations of the average American citizen are (1) bitterly complaining about the men who run the government and (2) sweetly ignoring all opportunities to make government better. It is only in times of extreme danger or adversity that the fundamental idea of democracy seems. really to catch hold.

How many manufacturers will take the trouble to follow the lead of President Belknap of Merrimac in finding out for their employees just where their candidates stand on important questions? How many producers will aid the National Association of Manufacturers in its campaign to keep the Government out of competition with private business? How many chemical men will join the National Economy League? One very serious fault with our indifferent electorate has been that good business leaders become golfers on Election Day. Conditions being as they are, however, it is likely that polling places will get a bigger crowd than the locker rooms on November eighth.

Chemical Labor That all American industries have shown tremendous advances in the output per worker per hour has been especially emphasized during the recent widespread discussions of technological unemployment, and it has recently been estimated that sufficient progress has been made, even during the depression, to make it possible for the national production of 1929 to be now handled by about thirty per cent. fewer workers than were employed that year. Chemical industries have made a better-than-average progress in this direction, and it is almost universally observed that there has recently been a marked increase in the proportionate number of technically trained plant workers, with an increasing lay-off of common labor. In some instances, the "progress" has been startling, as in the modern sulfuric acid plant where three men are today producing twice as much acid as twenty-seven workers did in 1930. Not only within the sphere of its own plant operations, but in any industry that adopts chemical processes and chemical control, chemistry is very plainly going to be a very serious contributor to technological unemployment.

Therefore, it behooves us to work out a means of spreading employment in chemical operations, and frankly this has not yet been accomplished. The five day week, in the ordinary sense, is obviously impractical in a continuous process. Mr. Huntington's suggestion of shortening the eight hour day has the very distinct disadvantage of increasing the number of shifts, with a corresponding increase in the opportunities for shut-downs and plant alibis. Several companies are experimenting with the eight hour shift, at which no man is allowed to work more than five days. In the case of common labor, this plan functions well, but it is admittedly disturbing to the work of the scientific and technical staffs. With the bright prospect of the extension of chemical processes into many fields, a workable solution of this problem becomes increasingly important.

Temporary or Permanent? Is the lower price level likely to have a profound, more or less permanent effect on chemical industry? Individual products will differ, of course, in their reaction to improved demand, but generally speaking, chemicals face the problem of meeting lower prices. The conflict of the natural versus the synthetic has assumed a novel aspect in the last eighteen months, when a number of synthetic processes have become unattractive at present prices. Is this a permanent or temporary condition? Are several of our prize syntheses merely price checks on natural materials? If this is really so, then our popular viewpoint on research is due to receive a rude jolt.

What about the economy of recovering by-products? Certain companies are keeping out of the red solely on waste products, but, contrariwise, the cost of equipment installed to refine by-products is now, in other companies, a heavy burden. The recent British Alkali Works Report shows clearly that by-

product sulfate is not profitable. In a number of gas plants, ammoniacal liquor is running to waste. Does glycerine recovery pay?

These are disturbing questions. Will they be reflected in financial circles and the investing public? The list of products and processes that have been relegated to the scrap-heap in ten years is impressive. Wall Street is enthusiastic about chemical prospects, but usually adds significantly "highly speculative." This, we know is only a half truth when our larger and more diversified manufacturing units are under discussion. As business becomes better, chemical industry is not going to pick up where it left off before the depression. New influences and profound effects have been added in two years. This necessarily means an optimistic outlook towards the future. It also means, however, that we must first recognize that changes have taken place. We must plan accordingly.

Another Warning We have been caught being careless—and several readers have called our attention to the percentages of the decline in world chemical trade as compared with American chemical exports from our editorial "Warning" in last month's number. We carried over these figures from the original report and they were wrong. But the fact remains that the decline in world chemical trade has been greater than the decline in our chemical exports. The figures we quoted were 67.2 per cent. for world trade and 28 per cent. for American chemical. These should have been world trade, 33.3 per cent. and American, 31 per cent.

A Better Product It has been preached—and we have done our share—that these are good times for industry to overhaul its processes and improve its products. Accordingly, it seems quite fitting that we should have practiced this doctrine, and our readers will find in this number that by condensing the Price List pages, we have been able to expand both the market comment and the news, and that furthermore for their convenience, we are classifying the facts and figures of the American chemical industry into sections for ready reference and quick reading. We always appreciate constructive criticism as to how CHEMICAL MARKETS can be made more useful to you.

Quotation Marks

In industrial research, many fortunes have been swallowed up because the research men underestimated the factor of the time which elapses between initial research and a successful commercial development. In other cases, while expensive research went on, the trend of the market had changed, or entirely new improvements had been introduced which rendered the initial problem obsolete.—*Leo H. Baekeland.*

If it were true that the nation could not exist half free, half slave, it is today even more pertinent to say that business cannot exist half socialistic and half competitive. There is no economic justice in asking investors to capitalize a Government enterprise that competes with business or in asking business taxpayers to maintain that which will destroy them.—*Dr. Stephen I. Miller.*

If I entertained for a moment the thought that our present unemployment and economic situation had any of the elements of permanence, I, for one, would wish to evolve other plans rather than again to mobilize the private welfare and relief resources.—*Walter S. Gifford.*

I venture to say that if one-tenth of the money which has been lost in this depression had been put into a wisely planned program of research, the other nine-tenths would never have been lost.—*Karl T. Compton.*

The most serious danger threatening civilization today is the rapid development of a perverted sense of democracy both at home and abroad, which encourages public opinion not only to accept but to idealize mediocrity and which allows public opinion to be ostentatiously arrogant in its indifference to intelligence and antagonistic toward any process of thought in its leaders which rises above its own average mental capacity.—*President Hopkins, Dartmouth College.*

Fifteen Years Ago

(From our issues of October 1917)

Union Carbide & Carbon formed by merger of Union Carbide, National Carbon, Prest-O-Lite, and Linde Air Products.

Crude muriate of potash, as potash supplies become scarce, is quoted at $400 a ton compared with $40 in 1914.

Federal Dyestuffs and Chemical Corp. placed in hands of receivers.

Government commandeers 7,000 tons of caustic soda for war purposes.

H. Gardner McKerrow suggests formation of a national association of dyestuffs manufacturers.

Kuttroff, Pickhardt & Co. of Manhattan, drugs, chemicals, etc., incorporated with capital of $200,000.

The Uniform Chemical Sales Contract

By Williams Haynes

In 1922, when chemical business was just coming out of the post-war tailspin, a Joint Committee of the Manufacturing Chemists' and the Chemical Salesmen's Associations drafted a model sales contract. Today similar stresses have revived the movement to take the conditions and terms of sales out of competition; and the man who, ten years ago, was chairman of that Joint Committee reviews here the advantages of the uniform contract; tells why, after approval by legal counsel and the Association of Purchasing Agents, it failed then, and points out what now might be done towards this objective.

SELLING chemicals at a profit is always a difficult job. The important industrial items are all marketed by several strong producers. Competition is keen and, because the products are so thoroughly standardized in chemical and physical properties, centers upon price. Even the natural, distinctive advantage of plant location, which ought to give a producer a more or less protected home market, is neutralized by the practice of freight equalization, a habit strongly encouraged by the Interstate Commerce Commission's conception of rate structure. There is no American chemical trust; not even a dominating producer who might serve, as the I. G. does in Germany and I. C. I., Ltd. in England, as a price leader, and the two or three companies which in a few products do command half the output of certain chemicals refuse, for fear of the anti-trust laws, to set the price pace by openly announcing a schedule as is done for steel, petroleum, and other basic industrial raw materials.

In good times or bad these are the every day conditions of chemical selling. At best they are hard conditions. At worst they exert a tremendous pressure on price, for as every chemical executive knows, the demand for chemicals is from other industries who only buy for their manufacturing needs and accordingly will not be tempted to buy more at lower prices. Chemicals are in this respect like foodstuffs. The vats and grinders of the consuming industries have limits of capacity as definite as the human stomach, and just as far removed from the influence of the chemical maker as the human appetite is beyond the control of the farmer. Such a demand, so little stimulated by price reductions, is offset by a supply which is difficult to control. Potentially an over-supply of most chemicals is almost always chronic. Because of the continuous operation of most chemical processes a curtailment even of current production is very costly to the producer. Inflexible demand combined with continuous production heaps a heavy burden of economic responsibility on price. No wonder price fluctuations of chemicals are wide. Inevitably, the cost of these violent price changes necessary to balance supply and demand must always be borne by the chemical manufacturer.

These are painfully familiar commonplaces to our chemical executives. I have repeated them only because they demonstrate, as plainly as a proposition from Euclid, how vital it is for the profitable operation of chemical industry that chemical prices be relieved so far as possible, in every way fair to the chemical buyer, of every undue or unnecessary pressure.

During the past three years sliding commodity prices, shifting gold values, unbalanced budgets have driven home to everybody the importance to us all of stability. It is the chemical industry's boast—and responsibility—that its products are the essential raw materials of every other industry. In the case

Agreement entered into this____day of____19__, between

THE JOHN DOE CHEMICAL COMPANY

the Seller and____the Buyer

The Seller hereby agrees to sell and furnish and the Buyer agrees to purchase and accept the quantity and kind of the following materials required by the Buyer for____own use and consumption in factor____located at____ during the period from____19__ to____19__ inclusive; at the price hereinafter stated and upon the terms and conditions herein contained, to wit:

ARTICLE:

QUALITY

QUANTITY:

DELIVERY:

PRICE

CONTAINER CHARGES:

TERMS AND CONDITIONS

1 *TERMS OF PAYMENT*

Invoices shall be paid in net cash, within thirty days of date of same, payment to be in U. S. gold coin or its equivalent. Non-compliance with said terms of payment shall give the Seller the right to suspend further shipments until all previous shipments are paid for; and if in the judgment of the Seller, the financial responsibility of the Buyer shall at any time become impaired, and written notice thereof be given by the Seller to the Buyer, the Seller shall have the right to suspend further shipments on this contract until adequate security for payment is furnished by the Buyer. If such security is not furnished within thirty days after the notice, the Seller shall have the right to cancel this agreement.

2. *WEIGHTS*:

Invoice weights and tares to govern.

3. *DELIVERIES*

Each month's quota shall be considered as a separate and independent contract.

The Buyer shall give to the Seller orders covering shipment on or before the 15th day of the month previous to the month of shipment.

4. *CONTINGENCIES*.

In the event of war, fire, flood, strike, lockout, accident or other like cause beyond the control of the parties, interfering with the production, consumption and transportation of the materials herein described, or the supply of any raw material of which the said materials are a product, deliveries under this contract may be suspended during the period required to remove the cause or repair the damage, and the total quantity deliverable under the contract shall be reduced in proportion to the duration of such suspension.

5. *TAXES*

Any tax or other Governmental charge upon the production and/or sales and/or shipment of the materials herein specified becoming effective within the term of this agreement may, at the Seller's option, be added to the price herein provided.

6. *CONTAINERS*

(a) The Buyer agrees to use Seller's returnable containers only for the reasonable storage of Seller's material originally shipped therein, and to return same, freight prepaid, within.....days. In event containers are not returned in.....days the Seller shall have the option of refusing to accept the same. All such containers will be charged at the Seller's regular prices and paid for at the same time as the contents, but credited at the price charged when returned as above provided.

(b) If the material covered by this contract is shipped in tank cars furnished by the Seller, the Buyer agrees that such tank cars will be unloaded within forty-eight (48) hours (Sundays and holidays excepted) after receipt thereof.

7 *CLAIMS*

The Buyer agrees to make an examination and test on arrival, and that failure to give notice of claim within ten (10) days of arrival shall constitute a waiver by the Buyer of all claims.

8. *AGREEMENTS*

No agreements or understandings not expressly stated herein shall be binding in the interpretation or fulfilment of this agreement.

This contract shall be binding upon, and enure to the benefit of the successors of the parties hereto respectively

In witness whereof the parties hereto have caused this agreement to be executed in duplicate the day and year first above written

____ Seller ____ Buyer

By ____ By ____

Address ____ Address ____

The model form of Uniform Chemical Sales Contract which was drafted ten years ago by the Joint Committee on Contracts, Williams Haynes, Chairman, Edward J. Barber, John W. Boyer, Charles N. Butterworth, John A. Chew, Phillip M. Dinkins, Ralph E. Dorland, George Eno, John A. Kienle, F. L. McCartney, Samuel Rigney, J. H. D. Rodier, Philip S. Tilden, Charles N. Turner, Milton C. Whitaker, and S. W. Wilder

of textiles, rubber, leather, paints, paper, glassware, and medicines this is obviously true, and the chemicals involved in the manufacture of all these important goods have direct bearing upon the prosperity of thousands of investors and millions of workmen. Industrially the stability of caustic soda, sulfuric acid, and our other basic chemicals are every bit as important to the prosperity of the land as from the agricultural point of view is the stability of wheat, cotton, and the other so-called cash crops.

"Elementary, my dear Watson" as Sherlock Holmes would say, but I have reviewed these familiar facts because in such times as these some short-sighted buyers forget that the price of their chemical supplies is of much less importance to them than the absolute assurance of quality and delivery and the sure knowledge that no competitor is buying upon more favorable conditions and terms. In other words, the consumer's stake in the chemical market is the same as the producer's. To both buyer and seller, stability is of paramount importance. Yet in bad times, when stability is most needed, both buyers and sellers delight in practices that very effectively make for instability. Tweedledee and Tweedledum fighting over the broken rattle!

Solid Foundations

The very essence of stability in this matter of our industries' chemical supplies, is the steady shipment of these necessary raw materials on known, agreed terms as to quality and quantity, delivery and price. Chemicals for future delivery are sold on contracts which are commonly for the "buyer's requirements." This is an uncertain quantity which even the inclusion of a minimum figure for monthly delivery cannot make definite. As it is often impossible, even in times of normal business activity, for the paper mill and the glass factory to forecast accurately how many pounds of alum and ash they may require during twelve months, it appears inevitable that at the very core of a chemical sales contract there is an inirradicable element of uncertainty. Since chemicals enter the competitive lists without the protective armour of a predetermined, known price, such as the maker of motor cars or safety pins puts upon his wares, there is added to this uncertainty of the quantity to be delivered, some uncertainty as to price.

These two variables have complicated the chemical sales contract. They have made it, depending upon the market situation, unfair now to consumer and then to producer. Chemical sales competition being what it is the buyer is, of necessity, always right—even when his position works a great wrong upon the chemical seller. The result has been that, in actual practice, we have a chemical sales contract with uncertain quantities, sometimes with indefinite deliveries, and always with protection against price decline; a document that legally is not even a good and enforceable option.

Just ten years ago, after the disastrous deflation of 1920 with its train of repudiated orders and the dumping of distressed stocks, the chemical industry awoke to the fact that their sales contracts, instead of assisting to stabilize, were used as levers to upset market conditions. From the purchasing agents and the chemical salesmen in the front line trenches of the competitive battle came the suggestion that a contract of sale that was fair in its terms and legally binding on both seller and buyer alike would be an advantage to both. The National Association of Purchasing Agents had already propounded this truth and been instrumental in drafting model contracts for coal and iron.

How the Committee Worked

A Joint Committee of the Manufacturing Chemists' and the Chemical Salesmen's Associations was appointed and all during that winter, sixteen men labored with the problem. First the existing contracts of twenty chemical companies were analyzed and compared and the model documents approved by the Purchasing Agents studied. Then the salesmen's group drew up a draft of proposed conditions in the physical form and style approved by the buyers. The contract was then submitted to the chemical companies and in turn referred by them to what at the time was estimated to be about a million dollars worth of legal counsel. One minor change was made in the proposed draft.

On June 22nd, 1923, the Joint Committee issued its report and published the model form that is reproduced here. The report was enthusiastically received. The uniform contract it submitted failed of adoption—not because the purchasing agents of the consuming industries opposed it; but because the purchasing departments of two of our largest and closely associated chemical companies refused flatly to buy chemicals under the terms and conditions that their own sales departments had helped to formulate.

That effort was not wholly wasted. The time and the money and the brains invested was perversely prevented from paying full dividends; but a number of companies did revise their contracts in several respects. The fact that until the stress of recent bad conditions very little competition has been upon the basis of terms and conditions is justly to be credited to the model that was at that time held up to the industry.

Similar causes produce similar results, and the instability of our chemical markets during the past two years has revived the proposal for a uniform chemical sales contract that will remove the uncertainties in our existing sales agreements as to quantity, and delivery, and price. Last year the Manufacturing Chemists' Association worked out a series of "Standard Sales Clauses." A Committee is now at work re-

vising these proposals. It is likely that a new model contract will shortly be submitted to the industry.

Ten years ago protection against decline in price was the mainspring of instability in our chemical sales contracts. This has remained. It must be removed, if the chemical sales document is to be anything more than an option. It can be removed by the concerted action of the industry.

However, just as the depression of today is more serious than the deflation of a decade ago, so the stability of the industries of the country has been more shaken, and into the chemical sales there has been injected a new disturbing element. The demand for discounts on the tenth of next month (discussed at length in CHEMICAL MARKETS, September, 1932) has transformed what is supposed to be a premium for the prompt payment of bills into a poorly disguised method of price cutting. To the elimination of the price protection clause we have now added the problem of standardizing again the cash discount.

Unfortunately this cannot be done by any trade association, for it has been held to be a part of price and so without the legitimate activities of the trade organizations. But what should be done is very plain. Chemicals should be sold F. O. B. works for cash in ten days.

Efficiency in Solvent Recovery

In view of the fact that three kilos of acetone are volatilized in the course of production of each kilo of cellulose acetate rayon, the economic necessity for recovering this solvent is self evident. At present four main types of acetone recovery processes are available. There is solution in water; solution in cresol, or a 3.4 mixture of meta-cresol and tretralin (Bregeat process); absorption by active carbon; and absorption by silica gel. In a recent issue of "Metalborse" (August 3, page 991), it is pointed out that certain disadvantages are peculiar to each of these processes. Dissolution in water is lengthy and none too efficient, giving a recovery yield of 80 per cent., and necessitating an installation on a very large scale, against which must be set off the cheapness of the absorbent medium. The drawbacks of the Bregeat process—in spite of a 90 to 96 per cent acetone recovery—are the corrosive nature of the absorbent agent and the loss of one kilo of cresol for each 10 to 12 kilos of recovered solvent. The excessive heat developing in the course of acetone absorption by active carbon may result in a conflagration unless the precaution is taken of working in an inert atmosphere. Silica gel absorbs atmospheric water vapor in addition to solvent, while the hot steam subsequently required to drive off the acetone from the gel results in partial decomposition of the solvent.

With the "acticarbon" process introduced by the Societe de Recherches et d'Exploitations Petroliferes of Paris, even vanishingly small concentrations of acetone vapor, as low as one gram per cubic metre, are recoverable with an average yield of 96-97 per cent. After driving off the absorbed solvent with water vapor, the charcoal is again available for use, but it should be noted that in common with other carbon absorbents, this material is poisoned by sulfur compounds, coal tar bodies and dust.

—*The Chemical Age.*

We Congratulate

Clarence P. Seaverns, October 3, 1871

Charles M. A. Stine, October 18, 1882

Milton Kutz, October 26, 1883

We salute the dean of American chemical merchants, Clarence P. Seaverns, of Howe and French, Boston, whose chemical business experience reaches back to the time when he went to work from seven a. m. to six p. m. for three fifty a week; as salesman for this same firm, at a time when the partners wore silk hats and drove to the office behind a span of bays. "C.P." is one of those original successful men who claim to have reached the top not by hard work but by good luck, which so far as we can learn consisted chiefly in using his head instead of his feet, and in carrying on the old, old New England tradition of his old Boston house with some modern innovations in making lacquer and belting cements.

On June 14, 1907, Ira Remsen handed to a thick-set, determined, hard working young chemical student, a sheepskin certifying that Johns Hopkins University had conferred upon him the degree of Ph.D. July 1, 1907, this same young man punched the time clock in the organic department of the Eastern Laboratories of the Du Pont Company in Wilmington. Six years later, he was chemical director of the company and an internationally known expert in the field of nitrocellulose and coal-tar products. Charles M. A. Stine occupies today one of the most important positions in the chemical industry. We congratulate him upon the way he fills this niche, and to a good sportsman like him send the old Indian sign greeting "Good Hunting!"

We should commiserate—not congratulate—Milton Kutz, for he must be having an extremely difficult time in enjoying today his pet hobby of "selling chemicals at a profit," but we congratulate his company in having in him one of those now rare, but once popular American idols, from office boy to vice-president. Mr. Kutz was fourteen years old when he joined the staff of Roessler and Hasslacher; from the home office he went out on the road, ending as Philadelphia manager, and came to New York as sales manager ten years ago. He is famous as being one of the most hard working executives in the industry—a man who knows every kink in chemical marketing—a leader who does more than he asks his men to do.

Plasticizers--
Good, Bad and Indifferent

By A. M. Corbet

THERE is a perpetual search for the ideal plasticizer, and until it has been found the advantages of the available mediums must be combined together. Although the ideal plasticizer does not yet exist, it is interesting to define what it should be, in order that we may effectively combine the best of the products at present available. In the first place, it should be a colorless non-hydroscopic and non-volatile material or liquid, being a solvent for cellulose and wholly miscible with other lacquer ingredients. It should impart plasticity to the film. Just as nitrocellulose is the basis of modern lacquer, and a solvent can be called a liquid which brings the nitrocellulose into colloidal solution, so a plasticizer is an ingredient imparting plasticity to the dried film.

Plasticizers for Cellulose Nitrate Lacquers.

	ADVANTAGES	DISADVANTAGES
Dibutyl Phthalate	Light-fast; good solvent power.	Rapid evaporation.
Tricresyl Phosphate	Almost non-volatile; good solvent power produces tough film.	Not light-fast.
Castor Oil	Almost non-volatile, superior elasticity, excellent cheapness.	No solvent power, poor color.
Methyl Rexalin Adipate	Good solvent power, stable.	
Oxalates	Good solvent power.	
Butyl Stearate	Excellent elasticity.	No solvent power.

Plasticizers for Cellulose Acetate Lacquers.

	ADVANTAGES	DISADVANTAGES
Triphenyl Phosphate	Produces good film, good solvent power.	
Diethyl Phthalate	Produces tough film.	Rapid evaporation.
Triacetin	Good solvent power.	Affinity for water.
Benzyl Alcohol	Produces tough film.	Rapid evaporation.

The objection to the solid form of triphenyl phosphate has now been overcome according to Rex Campbell in a recent issue of *Chemical Age* (London). Although adipates, and to a small extent the oxalates, have their uses, dibutyl phthalate and tricresyl phosphate seem to be employed more widely. As to how the various advantages of the accepted plasticizers can effectively be combined for use in nitrocellulose formulae, practical testing alone will show. Opinions differ very much, but there seems to be agreement that the number worth working on for reasons of price and properties are few; that good results are obtained with the use of mixed plasticizers—synthetic with synthetic; and that good results are obtained when plasticizers are mixed—synthetic with oil plasticizers or softeners.

As the qualities and properties of the narrow range of plasticizers which can be used commercially are well-known, it is not necessary to refer to them in detail. It should be noted, however, that those plasticizers which have special advantages have also disadvantages, whereas those with no disadvantages have no advantages either. The problem has therefore been to so formulate a lacquer that it combines the advantages of individual plasticizers and eliminates their disadvantages. On the basis of this, the accompanying tabulation is given for comparisons.

It is well-known that the usual gums and resins—not excluding synthetic resins—while contributing adhesion, durability and gloss to a lacquer, reduce its elasticity. With synthetic or true plasticizers, recent research has shown that although themselves solvents of cellulose nitrate they do not appear by any means to have all the combination action on resins that is to be desired. This failing must to some extent explain film disintegration. To overcome this difficulty it has, however, been claimed that the typical properties of resin and plasticizer can be united, and a number of synthetic resins are offered. Some of the claims for these are extravagant, but there are resins which, with improvement, may be likely to achieve this unity of purpose. At present

the products seem to retard drying to the extent that after weeks, and sometimes months, the lacquer film cannot be said to be rock-hard. Such plastic resins at present appear to be more interesting for leather and artificial leather finishes. They probably have a future in all varnishes and lacquers in their dual capacity.

Special Value of Castor Oil

Undoubtedly one of the greatest disadvantages of cellulose lacquer finishes is the early disintegration of transparent lacquer films upon exposure to ultra-violet light; recent research has been directed towards discovering a suitable plasticizer to render clear films completely, or at any rate more resistent to the action of light. The problem remains to the lacquer research technologists, and a solution would be welcomed by the lacquer industry, but improved plasticizers alone will not contribute to it. Without question, however, the diversity of application of cellulose lacquers is due in a very large measure to successful plasticizing.

All the plasticizers for cellulose lacquers in use today—with the exception of castor-oil and tricresyl phosphate—suffer in a more or less pronounced degree from the drawback of volatility. Whereas percentage losses in weight of 0.1 and 0.08 respectively were recorded on exposing castor oil and tricresyl phosphate to a temperature of 90° for seven days, considerably higher losses were suffered by other plasticizers, ranging from 83 per cent. to 4.5 per cent. Camphor—with a 99.8 per cent. loss after standing for two days at 100° C.—is obviously unsuitable for the plasticization of protective coatings causes the development of a yellow color in nitrocellulose coatings.

The most valuable property of castor-oil is flexibility, in which respect it appears to stand alone with butyl and amyl stearite. Not only is it superior to tricresyl phosphate, but it also stands above the variety of blown castor oil known as casterol. It has been suggested that improved properties are conferred upon cellulose lacquers by using a mixture of plasticizers, but castor oil itself produces a more elastic nitrocellulose film than in admixture with tricresyl phosphate. At the same time the mixture in question may well represent a valuable compromise inasmuch as the undesirable sweating tendency of castor oil would naturally be partially eliminated without undue loss of flexibility. Castor oil, however, is a non-solvent for nitrocellulose.

A proof of the firmness of the union which exists between castor-oil and nitrocellulose is provided by the fact that four days' toluol extraction of a film containing 56 per cent. of castor oil did not result in the slightest separation of oil.

Mixing Gas and Alcohol

The use of pure alcohol is impractical in our present engines, although special engines can be built to use it. However, mixtures of gasoline with 15 to 25% alcohol work very well in our present cars, with no change in carburetor adjustments.

Alcohol is about twice as effective as benzyl for anti-knock purposes, and is safer than lead tetraethyl. It also has a cleaning effect, and motors which are run on fuels containing alcohol remain freer from carbon deposits than motors run on other fuels. This cleaning effect was recently demonstrated on a Chrysler 66 by the Polish Automobile Club over a route through Poznan (Posen), Pniewy, Nowy, Tomysl, Rakoniewice, Tzacz, Koscian, Steszew and back to Poznan. The trip was 12,525. miles in 355 hours actual running time. The engine ran continuously, although the car stopped 29 hours, 46 minutes. The engine therefore ran continuously 384 hours, 46 minutes. At the end of the trip the cylinder heads and piston heads were very much cleaner than usual. The spark plug porcelains were perfectly clean. The valves were clean and showed very little wear. There was no wear on the cylinder walls due to the alcohol.

The fact that mixtures of alcohol and gasoline become turbid when a small amount of water is added and separate into two layers with more water has been considered a serious objection to their use. With a 70% gasoline, 30% alcohol fuel, the addition of 1.3% of water will cause separation. However, the lower layer will contain 56% gasoline and, therefore, will be a satisfactory motor fuel. Since the mixtures are not hygroscopic, there is little danger of this water's entering. It is probable that in ordinary weather water would do no more harm in alcohol-containing motor fuels than in gasoline, while in freezing weather it would do less harm, since the alcohol-containing layer would never freeze and plug the fuel line. Frost formation in the carburetor also is avoided.

The presence of alcohol improves the volatility of gasoline due to the formation of azeotropic mixtures. Due to the higher latent heat of alcohol the vapors entering the cylinder are colder, so the charge taken into the cylinder is greater.

The question of costs depends to a considerable extent on taxes and legal requirements. The manufacture of the absolute alcohol for the mixture with gasoline is not difficult or expensive. The question of the relative costs of absolute alcohol and gasoline varies from place to place. For example, in Australia and South Africa, where there is almost no petroleum and where there is an abundance of vegetable materials to make alcohol, the alcohol is cheaper than the gasoline. Here, where there is unlimited petroleum and very exacting alcohol laws, the cost of gasoline will be far lower than that of alcohol. Poland uses considerable alcohol-containing motor fuel, in spite of its large petroleum supply, partly, at least, because of a state alcohol monopoly. Sweden uses an appreciable amount of alcohol-containing fuel (sold as Lattbentyl) due to its liberal laws governing the use of alcohol for this purpose. In Australia the Shell Company is marketing "Shellpol," containing 15% alcohol.

Apparently alcohol can hardly be considered a replacement for gasoline, but rather an extender. Alcohol is not the only possible replacement or extender for gasoline, but is one which has been carefully tested in actual commercial use and found satisfactory. Synthetic methyl alcohol may later be of use in a similar manner to that in which ethyl alcohol is now used.

The Dominion Bureau of Statistics at Ottawa reports that Canadian copper producers reported an output for May of 21,356,879 lb. of copper, as compared with 22,077,843 lb. in April and 26,598,601 lb. in May, 1931. Nickel production rose from 3,384,620 lb. in April to 3,471,304 lb. in May, as against 10,653,724 lb. in May, 1931.

What Is the Distributor's Place?

If you want to start an argument among chemical sales executives, just ask this question--it is the topic of perennial debate and the following contributions result from an editorial published in CHEMICAL MARKETS which reviewed recent changes in chemical marketing methods.

Service Minus Costs

By Alex C. Fergusson
President, Alex C. Fergusson Co.

The chemical distributor, by many considered an evil, nevertheless is a necessary one. We, wisely or otherwise, have been willing to back this belief to the extent of a quite large investment in the most modern and up-to-date facilities for the storing and handling, and dividing and distributing of dry and liquid chemicals, oils, etc. at the lowest cost and with the greatest speed.

For our part, we cannot see how any producer of a chemical or a group of chemicals, unless the group be so large that it would warrant a very heavy branch office expense, being able to compete on broken carload business, with a well established local distributor with a reputation for efficient handling of orders and ample stock of whatever chemicals were called for, ready for instant delivery.

In these days of low inventories and buyers of expecting delivery day before yesterday when they do place an order, much business must be lost by a producer on account of delays and lack of adequate information, which the buyer wants to have before placing the order. Also more often than not, more than one item is required on an order and the well stocked chemical distributor will get the business and preference on account of ability to supply all the items desired to be delivered on the same truck.

In common with the general situation throughout the country and in practically all classes of business, the chemical distributor is suffering severely from a lack of volume and the inability of making a living profit or overage on the smaller turnover, on account of competitive prices.

We feel that a chemical distributor, with a broad knowledge of chemical requirements of his territory, gained over a long period of years, and with a competent staff of chemical salesmen, also so trained, such an organization should not constitute an expense in the distribution of chemicals, but rather present an opportunity and large outlet, at a minimum investment of overhead. At any rate such an organization, wherever located, should be here to stay because it performs a function economical and necessary.

We wish to commend you for bringing this matter up at this time.

Spot vs. Shipment

By S. J. Cohen
Manager, American Chemical Products Co.

We buy chemicals direct from the manufacturer, and on occasion, from the local distributor. From time to time, we have calls for various common chemicals from local buyers who would like to buy for a little less money than our established local distributors. If they are friends of ours, we usually tell them where to buy from the manufacturer, as we do not deal in chemicals. I have had occasion, however, to think about this situation and consider the tough spot in which the distributor finds himself.

One possible solution which ought to work out agreeably for all concerned, would be for the manufacturer to assume the full responsibility for the distribution of his chemicals in less than the standard bulk packages. I mean that the manufacturer should offer his distributor, the dealer, standard bulk packages, as barrels, etc., and also the set of smaller standardized units from a pound to twenty-five pound or other packages as desired. Certainly the manufacturer can make up a quantity of these packages at a lower cost than can the dealer, and the buyer would have every assurance that the chemicals were uncontaminated.

The dealer then can buy various sizes of unit packages for distribution to his trade, and from his experience, he will know what his trade requirements are, and the manufacturer should maintain a schedule of prices for these unit packages which will be satisfactory to the dealer. I mean that the individual buyer would have to pay as much to the manufacturer for a twenty-five pound box of copper sulfate, for

instance, as he would if he bought it from the dealer but saving himself the delay in shipment.

The dealer should be in a position to quote his bulk packages at a spot price with a reasonable advance over the manufacturer's quotation. However, he should have an arrangement with the manufacturer so that if his customer can wait a few days for delivery, he may accept such orders for the manufacturer's account, the item to be shipped and billed by the manufacturer directly, and the dealer to receive what amounts to a brokerage or commission.

The dealer must definitely accept the idea that most buyers will sooner or later find out where to buy chemicals at the best advantage, and he should treat his customers fairly by stating his position candidly. Spot deliveries from local stocks certainly are worth more to the individual who has not been forehanded enough to order in advance. At the same time, it is always a reflection on the dealer and weakens his position with the customer if the purchase is made directly from some manufacturer wherein the dealer received no credit.

If I want a price from a dealer on sodium bisulfite, I receive a spot quotation of 5c per pound, which may be fair enough if I have to have the material immediately. But if I write to the chemical company who happens to be supplying this dealer, and they quote me the same price of 5c per pound, delivered Rochester, they are not going to get my order, because I can buy it from a number of manufacturers at a price of 3¼c to 3½c per pound. The company may thereby delude themselves into believing they are protecting their agent, but actually what they have done is lost the business. If I am buying chemicals from a dealer and depending on him for some small quantities and spot deliveries, and he is able to quote me a price of 3c½, f.o.b. shipping point, I will give him my order. While his margin of profit is very small on such a transaction, it is a whole lot better than not getting any.

The same principle of delivery would work out on carload orders through a local agent where the agent carries less than carload spot stocks. In the above, the dealer is never anything but a dealer and has no opportunity to represent himself otherwise, and I think it emphasizes his position and gains respect for him by his customer. At the present time, I think most people buying from dealers feel themselves a "catch-as-catch-can" proposition, and they only, when they are unfortunately out of stock, call on the local dealer, but avoid him by all means if any quantity of material is to be purchased.

It seems to me that the manufacturer is the one to gain or lose most, and should therefore take the initiative and give his representative an opportunity to stand squarely for what he is. Perhaps the manufacturers are doing this and my limited experience has not met this condition. Perhaps some dealers prefer the "catch-as-catch-can" arrangement, thinking there's a greater profit and more credit to them for securing business in this way.

Laissez-Faire

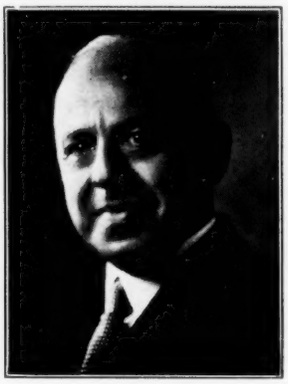
By C. T. Thompson
President, Thompson-Hayward Chemical Co.

It is a good sign when people commence talking about what is going to occur after the depression. Some of us aren't so sure that there is going to be an end to it.

I hate to sit down to a letter of this sort with snap judgment but I do want to tell you that I read the editorial entitled "The Place of the Distributor," and was very much impressed with it since it is the frankest, and clearest statement of some of the aspects of the situation that I have read in a long time and it has taken a good deal of courage to write it.

You will recall that as much as three or four or five years ago I expressed the anxiety in my mind as to the ultimate place of the chemical distributor in the sun by the fact that his influence and usefulness was being gradually narrowed. However, in my opinion he can only be eliminated by the use of pressure methods which are still today contrary to law and I am firm in my conviction that before this depression is over, that either a new type of commercial policy shall be submitted with the aid and knowledge of the Government, or there will be a further breaking up of the larger units and artificial set-ups that will enable us again to go back to the old system of free and open and individualistic action not only on the part of distributors but on the part of producers. If

Scion of one of Philadelphia's oldest chemical families, and joint though separate successor with his cousin of the old Fergusson Brothers' business —Alex C. Fergusson became a chemical distributor with an inherited experience which he has vastly increased since 1892. He has shown his modernity by embarking, as a sideline, in the manufacture of chemical specialties



Aggressive, original chemical merchandising and the kind of business leadership that wins the devoted loyalty of every National Oil and Supply Company employee are the hall-marks of Arthur Phillips' qualifications to discuss the chemical distributor's problem intelligently and with sound business conclusions

Charlie Thompson of Thompson, Hayward, Kansas City and "all points South West" is a stormy petrol of the chemical sales world and a militant individualist who thinks his own thoughts and has the courage to act upon the convictions which he has hammered out of his competitive business experience

Trained at the University of Michigan, after serving as a lieutenant in the field artillery, Samuel J. Cohen embarked in the extremely, highly complicated, specialized business of manufacturing on a commercial scale, a group of rare and unusual chemicals sold direct through extraordinary channels, but he has been a careful observer of chemical sales and salesmen

this latter idea is not economic or sound, frankly I see no long continuing place in the sun for the individualistic type of chemical distributor. He must necessarily become absorbed with either a direct representative or part of the selling organizations of the major companies, subject to their complete control both in name and in fact.

My own theory has always been that people, as a whole, are better off even if progress is slower, if they are free from undue Governmental interference and if they have a certain freedom of action in both their personal and business life, and if the old theory of the survival of the fittest and free and open competition was still allowed to be practiced. I am firmly convinced that the temper of the American people will not tolerate the individual being eliminated from various fields of activity by artificial devices contrary to law. The minds that attempt to believe it possible to eliminate people like the chemical distributor, for instance, are flirting with possible social upheaval if they do not eliminate him in a manner that is recognized as economic and just.

There is no question today that the distributor in self-defense resorts to means and methods that disturb the economic situation for the producer, due to conditions that the producer himself has brought about.

The only flaw I find in your editorial at all is the fact that you seem to think that uncertainty in the price situation is necessarily evil. I think fundamentally in the long-run they are beneficial. They develop resourcefulness and self-reliance and I still am convinced that the old economic law, brutal as it may sound, of the survival of the fittest, should still be the governing law with regard to commercial enterprises as well as to the individual citizen.

What Price Selling?

By M. Woldenberg
President, A. Daigger & Co.

"The Place of the Distributor," will always make splendid debating material. Personally, I feel today as I felt immediately after the close of the World War —the place of the chemical distributor is definitely established. He renders a valuable service both to the manufacturer as well as the consumer. The legitimate, ethical distributor is in a position to represent a manufacturer as well as the manufacturer's own office in the territory represented, but with the additional great advantage of no expense to the manufacturer. The distributor earns whatever he makes and makes only what he earns.

Manufacturers producing, let us say, one, two or three commodities are in no position to properly solicit the consuming trade regularly in any given district unless this district happens to be a consuming district in a concentrated area. The distributor on the other hand is handling hundreds of commodities and is constantly soliciting energetically the prospects in his district, so, without added expense, he is in a position to capably represent the manufacturer in the district which he serves.

The distributor, who has an established reputation for integrity can and always will render a service which is irreplaceable. Therefore, he has a definite place in the economic structure under the capitalistic system.

From the standpoint of the consumer, all things being equal, he prefers to do business with the distributor, because it is more economical for him to concentrate his purchases and usually a close relationship exists between the distributor and the consumer.

In most instances the manufacturer prefers to work through the distributor because his collection expense and credit hazard has been reduced to a minimum. He can work through the distributor much more economically than through operation of his own office.

Warehousing Vital---

By Arthur Phillips
President, National Oil & Supply Co.

In my opinion, the last two sentences in your editorial on "The Place of the Distributor" contain the real answer to the exact position of the producer and the distributor.

The present distributor, and in most cases now the producer's agent, was formerly just a jobber of chemicals, acids, etc. The greater demand for different chemicals in less carload quantities has made the distributor's position a more important one year by year, until today he is an absolute necessity.

Many large consumers in recent years have been educated to purchase in truckloads rather than carloads, and the up-to-date distributor has the necessary number of auto trucks to make prompt delivery, when the consumer requires his material. This condition especially applies to the producer who manufactures a large number of items. However, I have also noted in recent years that even the manufacturer who only produces one product prefers to have it distributed through an agent who is properly equipped to represent him.

There are many reasons for this situation. Most important, however, is the prompt service which the distributor is able to render to the consumer. This condition in my opinion, will require even closer attention when business again revives, as the consumer who has for sometime past adopted a "hand to mouth" policy as far as stocking materials is concerned, will undoubtedly continue to operate along these same lines to even greater extent in the future.

The credit situation is also a most important factor and for sometime past the larger producers have been willing to be relieved of this additional burden and this condition has been a most important factor in leaving the less carload distribution to the local agent.

With the time when business revival will again be here, the distributor will assume even a greater responsibility in the distribution of chemicals, acids, etc. than in the past. A closer contact between the producer and distributor is most essential at all times and it is only a question of time before the distributor will be practically a part of the producing organization.

The Mid-West Market

By Wilson I. Doan
Manager St. Louis Office, Dow Chemical Co.

Compared with the total number of jobbers at present, a list of the chemical distributors for the Middle West during the war was negligible. Generally speaking, chemical distributors in the Middle West had not then built reputations with manufacturers,—there were a few outstanding exceptions. Subsequently a host of jobbing firms has been created, and among these firms certain ones have established reputations for serving their patrons and their sources of supply in a manner which insures their continued recognition by the producers. In other words, their continued existence is insured so long as they can continue to move satisfactory tonnages for their principals.

The future for a financially sound, ethical jobber of chemicals in the Middle West holds as much promise and is as assuring to him as was his outlook at the close of the war or during the economic adjustment of 1920-21. In fact, a jobber possessing these attributes —assuming he has an established patronage—has several intangible assets to his credit which he might not have possessed at the close of the year 1918.

On the other hand, numerically, there is a large percentage of firms who classify themselves as chemical jobbers whose continued existence is questionable. Generally speaking, the fundamentally sound distributor has remained loyal to his manufacturer in much the same manner as the manufacturer's salesmen. If the manufacturer's competitor came to this jobber with an unusually attractive proposition, the jobber was not disposed to change his source of supply, but rather to discuss with his principal the profits or commissions which were available from the other source. The other type of jobber aligns himself with first one and then another producer, and in the long run loses the confidence of the majority if not all manufacturers.

It has seemingly required a considerable length of time for manufacturers to realize that this jobber who purchased primarily on a price basis, in turn offered materials on the same basis as he purchased—cut prices. This situation was not so serious until recent years when more difficulty has been experienced in holding commodity prices at their recognized levels. Many small producers, whose contacts with consumers are almost exclusively through chemical jobbing houses, have learned during these years of depression that their livelihood and expectancy of sales for the future depends to a fair extent at least on marketing their products through distributors of recognized integrity. The day is rapidly passing when the "fly by night" jobber can expect concessions from the small producer with the hope of moving tonnage at cut prices or on misrepresentation concerning quality.

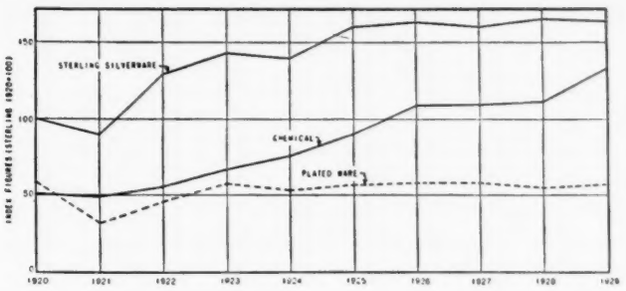
If excessive capacity and over-production are tribulations to the chemical manufacturing industry today, to a much greater extent the legitimate chemical distributors are facing a situation brought about by an unreasonable number of jobbing firms in commercial centers. There will be a survival of the fittest, and the loyal, ethical jobber can anticipate the support of his principals to this end, whereas the firm which purchased from first one and then another manufacturer cannot expect, and probably will not receive, the same cooperation from his principals.

Sponge Rubber Volume Costs

In manufacturing sponge, the rubber may be blown anywhere from two to eight times its original volume. Pigments cannot be expanded, and are therefore expensive materials in sponge. Below is shown volume cost of blown rubber and some standard compounding materials:

Material	*Pound cost*	*Expansion in cure*	*Blown, cured, specific gravity*	*Cured cost per cubic foot*
Rubber	$ .05	5 times	0.19	$ .58
Zinc Oxide	.07	None	5.60	24.50
Lithopone	.05	None	4.20	13.10
Barytes	.015	None	4.20	3.93
Clay	.01	None	2.60	1.62
Whiting	.01	None	2.60	1.62
Petrolatum	.04	None	0.90	2.24

(R. R. Olin Laboratories, Akron, Ohio.)



Silver a Chemical Raw Material

By Charles White Merrill
Associate Mineral Economist, Common Metals Division, Bureau of Mines

IN RECENT years silver has been less fortunate than most other metals. During the latter half of the nineteenth century a new use for copper was found in the electrical industry, with the result that this industry now absorbs over one-half of the world's production of copper. Steel production has grown in response to the requirements of machine making, of railroad expansion, of skyscraper architecture, and later of the automotive industry. Tin has found new uses in the bearings of fast-moving machines and in the canning industry. There are other examples of enormous expansion of metal utilization during this period; but after 1870 the monetary importance of silver waned, and its high unit price proved to be a serious handicap in new fields of metal utilization. However, silver has not been entirely unsuccessful in finding new industrial uses.

Most important of these new uses for silver has been that in photography, an industry greatly expanded by the even more recent development of motion pictures. Electroplating and mirror making are relatively recent consumers of silver. The use of silver amalgam in dentistry, although long practiced, did not receive the approval of the leaders of the profession until recent years. Still more recently silver has been absorbed in increasing quantities by the so-called industrials, largely in connection with electricity and as solder. It is apparent, however, that the importance of the sum of the requirements of these relatively recent developments to silver does not approach that of electricity to copper, galvanizing to zinc, or the storage battery to lead.

The discovery of a use comparable to any one of those noted for other metals would greatly change silver's economic situation, but the beginnings of such a development are not apparent at present. However, one or more of the many new uses suggested may result in consumption large enough to be economically important to silver producers. Some invention may find its development dependent on silver.

The total consumption of silver in the arts and industries of the United States was 23,578,955 ounces in 1931, compared with 23,981,164 ounces in 1930, 28,601,311 ounces in 1929, and 25,826,554 ounces in 1928. The consumption for 1930 represents a decrease of 16 per cent. compared with 1929, but the 1931 consumption is less than 2 per cent. below that for 1930. Total turnover of silver by the arts and industries of the United States was 35,252,656 ounces in 1931 compared with 35,119,520 ounces in 1930, 41,426,263 ounces in 1929 and 37, 238,683 ounces in 1928. The ratio of scrap returned to smelters and refiners to total turnover has increased progressively during the past four years from 30.6 per cent. in 1928 to 33.1 per cent. in 1931. Manufacturing losses of silver continue to be negligible compared with the quantity of silver handled.

The chemical industry made products containing 9,652,213 fine ounces in 1928, 11,151,286 ounces in 1929, 11,401,719 ounces in 1930, and 10,174,388 ounces in 1931. This silver entered ultimate consumption or was returned to smelters or refiners as scrap through the photographic, electroplating, and mirror industries, was partly consumed as chemicals in laboratories and in medicines, and was sold through jobbers to unclassified users.

Manufacturers that alloy, roll, draw, and rolled-plate precious metals made products containing 3,916,814 fine ounces of silver in 1928, 4,625,-838 ounces in 1929, 3,732,744 ounces in 1930, and 3,656,982 ounces in 1931, exclusive of those sold to silversmiths. This silver entered ultimate consumption as jewelry, optical goods, novelties, industrial products, and in other forms.

The sterling silver industry used only 76 per cent. as much silver in 1930 as in 1929, but the consumption for 1931 showed a marked recovery. This recovery

undoubtedly was partly the result of the lower price of silver which made possible the lowest retail price of sterling silverware ever quoted.

The photographic industry continued to consume silver in 1930 at approximately the 1929 rate but there was a 13 per cent. decrease in 1931 compared with 1930. The consumption of silver in the photographic industry closely parallels activity in the moving picture industry, its most important customer. In the field of still photography some increase of silver consumption can be expected as a result of the introduction of a new type of panchromatic film for popular use. This new type of film which records the reds and yellows more satisfactorily, is said to contain about twice as much silver as does the ordinary type of popular film.

The electroplating industry has shown a sharper decline in silver consumption for 1930 and 1931 than any other important silver-using industry. The consumption in 1930 showed a 32 per cent. decrease from that for the previous year and was followed by a further decrease of 17 per cent. in 1931 compared with 1930. Although it is probable that during the past two years there has been an increase in the use of unplated and very light plated ware at the expense of better-quality electroplated silverware, a resumption of demand for the heavily plated ware, because of its greater durability and ultimate economy, may be expected with the return of more normal conditions.

Jewelry, optical goods, and novelties required 15 per cent. less silver in 1930 than in 1929, but the 1931 consumption almost equalled the 1930 figure. Apparently the vogue for costume jewelry, metal frames for glasses, and metal novelties has not waned greatly.

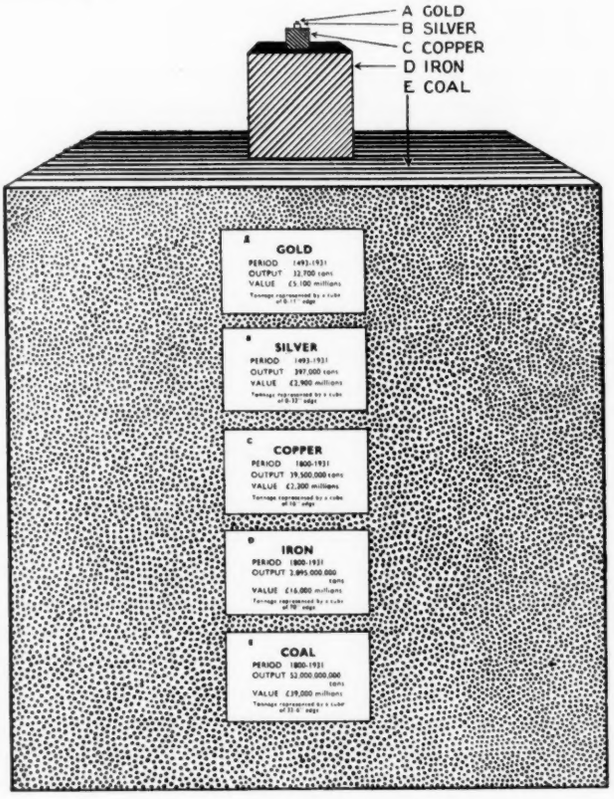
The consumption of silver by the so-called industrials showed a decrease of 42 per cent. in 1930 compared with 1929, but there was a small recovery in 1931. Silver solders continued to be the most important form in which this silver was consumed. The mechanical refrigerator industry appears to be the principal user of silver solders. Many other industries utilize this type of solder, as well as other forms of silver, in their manufacture.

The quantity of silver used in the manufacture of chemicals exceeds that used in any other industry, but only a relatively small part of the silver so used reaches the ultimate consumer in the form of chemicals. Most silver chemicals are intermediate products that are ultimately used in the manufacture of photographic supplies, silver-plated ware, and mirrors. Over three-fourths of the silver employed in the manufacture of silver chemicals is disposed of to the photographic industry alone. Silver chemicals used for medicinal or laboratory purposes are virtually the only ones that may be considered as entering ultimate consumption.

The chemical industry ordinarily obtains its silver as refined bullion, although a small premium is often offered for a purity above the standard 0.999 fineness of commerce. Usually the first step in the production of silver chemicals is nitrating; that is, the dissolving of the bullion in nitric acid to form silver nitrate. Silver nitrate is exceedingly soluble in water, but in solution it is precipitated as colorless crystals upon heating. Over 95 per cent. of the total silver used is disposed of as silver nitrate and thus requires no further chemical treatment. Silver nitrate is easily converted into many other salts. Silver cyanide and silver chloride account for most of the remaining production.

A relatively small amount of silver chemicals is reported as "pack for laboratory and medicinal use." In laboratories the salts of silver, principally silver nitrate, find wide application. Silver nitrate is very effective in detecting the presence in solution of chlorides. Water-testing laboratories ordinarily make a chloride determination on their samples as a matter of routine. The fact that silver nitrate is stable, neutral, and very soluble in water makes it a very important reagent to the chemist. In medicine salts of silver long have been used as antiseptics, for cauterizing, and for other purposes.

Approximately 10 per cent. of the silver-bearing products of the chemical industry are reported as disposed of for uses other than those mentioned, or to jobbers. It has been impossible to segregate the



The figures on the above diagram estimate the total production of gold and silver from 1493 to 1931 and of copper, iron, and coal from 1800 to 1931. These show outputs, in long tons, as follows: gold 32,700, silver 397,000, copper 39,500,000, iron 2,895,000,000, and coal 52,000,000,000

Silver Bought by the Chemical Industry
(Troy ounces—1,000 fine)

	1928	1929	1929	1931
Products:				
Silver nitrate	9,506,105	10,976,629	11,293,660	10,055,547
Other silver salts	146,108	174,657	108,059	118,841
Total silver content	9,652,213	11,151,286	11,401,719	10,174,388
Estimated losses	700	750	7,141	5,193
Total silver	9,652,913	11,152,036	11,408,860	10,179,581
Scrap to refiners	6,605	12,980	11,300	17,728
Total silver (purchases)	9,659,518	11,165,016	11,420,160	10,197,309
Disposal:				
Photographic	7,910,605	9,169,260	9,589,764	8,573,781
Silver-electroplating	203,718	228,163	126,254	139,059
Mirror	325,346	360,113	277,342	348,033
Laboratory and medicinal	235,676	220,272	7,978	45,319
Miscellaneous and jobbers (1)	976,868	1,173,478	1,400,381	1,068,196
Total silver sales	9,652,213	11,151,286	11,401,719	10,174,388

(1)Owing to the fact that some manufacturers were unable to distribute their sales according to uses, these figures probably include substantial quantities of silver which were ultimately used for the purposes enumerated above.

quantities entering these other uses or to follow the silver salts handled by jobbers to the ultimate consumers. It is probable that important portions of these salts find their way into electroplating and mirror making. There are many small electroplating shops and many electroplating departments in hotels and restaurants that specialize in the replating of worn electroplated ware. Some of these electroplaters find it more economical to use inert anodes, a procedure that forces the silver salts in the bath to furnish the silver deposit, because they thus operate without capital outlay for silver anodes.

Because few new uses for silver chemicals have been developed in recent years the immediate expansion of silver consumption in the chemical industry appears to depend principally on the fortunes of the well-established uses.

Empire Reports U. S. Chemical Trade Dwindling

The United States draws from the four corners of the British Empire such large quantities of its chemical requirements as to make the Empire the most important single factor in its chemical import trade. According to a recent issue of "Commerce Reports," this trade reached the high-water mark in 1929 at nearly £10,000,000, from which the disturbed economic conditions of 1930 and 1931 have led to a sharp decrease. Imports from the British Empire to a large extent consist of commodities essential to the domestic chemical industry. This recognition is perhaps most clearly evidenced by the fact that, in 1927, about 81 per cent. of the total imports from the Empire entered the United States free of duty, and even in 1931 this figure was 79 per cent. of the total. Gums, resins, and balsams comprise a major factor, followed by crude drugs and essential oils, all of which are the principal export commodities of British Empire countries in the Far East. The United Kingdom's chief item (creosote oil) and Canada's leading chemical products shipped to the United States (calcium cyanamide and sodium cyanide) are other non-dutiable imports.

At the turn of the century the British Empire accounted for over 30 per cent. of the total chemical importations; in 1913 it dropped to 22 per cent; but again increased in 1922, the first post-war year of business revival, to 29 per cent. Stiffening of inter-commodity competition, intensification of international trade rivalry, and the substitution of products of United States origin—in some cases the synthetic for the natural—for formerly imported articles, caused the relative importance of the imports from the British Empire to decrease slightly to 23 per cent in 1927 to 22 per cent. in 1929, and 15 per cent. in 1931.

During recent years Canada has assumed the leading position as supplier, followed by the United Kingdom, and then British India. The growing importance of Canada in the United States import trade has been correlative with the development of water power to produce electro-chemicals. Imports from Canada, as from most other countries of the British Empire, dropped more than 50 per cent, but there is little change in the character of the products. During 1931, Canada supplied fertilizer valued at £490,000, consisting almost entirely of calcium cyanamide, and industrial chemicals, of which sodium cyanide to a total value of £170,000 was an important item, despite its decrease from £400,000 in 1929. Imports of acetic acid in the past have consisted largely of the synthetic product from Canada, but this item also registered a decline from £400,000 in 1929 to £300,000 in 1930 and only £160,000 in 1931. Formerly the almost exclusive source of cobalt oxide, Canada still shares with Belgium as a source of supply.

United States imports of chemicals from the United Kingdom have fluctuated widely in recent years, with a peak of £4,200,000 in 1923 and only £800,000 in 1931. The trade revolves chiefly around creosote oil and other coal-tar crudes, and the United Kingdom ships to the United States 90 per cent. of its exports of creosote. Increased domestic output and foreign competition, however, have aided in reducing imports of British creosote from £1,800,000 in 1924 to £250,000 in 1931. The decline in chemical import trade with the United Kingdom is also accounted for by its disappearance as a source of ammonium sulfate, decreased shipments of glycerine, and loss of importance as a distribution centre for gums, resins and similar products from the Colonies. It still supplies most of the bleaching powder import requirement, some fertilizer and fair amounts of glue. Canada, the United Kingdom and British India contribute approximately 85 per cent. of all chemical imports of British origin.

Crude Natural Products from the Far East

Crude natural products have always kept India in an important position as regards imports into the United States. Its leading commodities, however, have also shown drastic decreases, chief among which is shellac, dropping from almost £2,400,000 in 1929 to £360,000 in 1931. Lac gum also figured in the 1931 imports to the extent of £197,000, while crude drugs accounted for almost £120,000. Gum kadaya, gum tragacanth, and other varnish, food and medicinal gums, and fair amounts of essential oils form the major portion of the remaining imports. Some of these products formerly were shipped to the United States by way of Great Britain, but this trans-shipment trade has lost its old importance. Hong Kong, a point of trans-shipment for many commodities from various countries, shipped in 1931 mainly tung oil, probably of Chinese origin, miscellaneous crude drugs, and a small amount of medicinals. British Malaya and Ceylon, with productive conditions similar to British India, parallel many of its shipments on a smaller scale. British Malayan trade, however, features gum damar as the principal item, with its crude drugs and small amounts of gums and resins other than damar accounting for the remainder of its greatly decreased trade. Ceylon is famed mostly for its distillation of citronella oil, and ships this with other essential oils and some crude drugs to the United States.

Essential oils, chiefly orange, lemon and lime account for the bulk of imports from the British West Indies, with Jamaica as the most important island in the group. Jamaican logwood, under present conditions, has been threatening to compete more severely with the Haitian logwood. Iraq's commodities are chiefly gum tragacanth and miscellaneous crude drugs totalling £22,000 and £38,000, respectively, in 1931. New Zealand trade has declined in proportion to its shipments of gum kauri, an indigenous product not available in commercial quantities in any other part of the world. Australia figures to a small extent in imports of essential oil. British Africa likewise participates with small quantities of essential oils, dye extracts, fertilizer materials and beeswax.—*The Chemical Age.*

Merrimac Asks Questions

MERRIMAC Chemical officials are proving a first class embarrassment to New England's pussy-footing politicians of the variety who still believe that the generalities of the Fourth of July oration will continue to fool the voters. Several candidates for election this fall in Massachusetts are wincing under the directness of eight questions recently propounded by President Charles Belknap.

In May of this year, while Congress was struggling with several economy measures, Monsanto and Merrimac executives introduced an innovation into American business politics. Employees were supplied with a weekly bulletin advising the stand taken by each Congressman and Senator from sections where Company plants were located.

September 12, Mr. Belknap wrote the following letter to candidates for Congress, legislative representatives, United States Senators, Congressmen not up for election, and all important Massachusetts state officials: "You are a candidate for nomination for....., on the ..... ticket, at the coming election. As you have constituents in the employ of this Company, I am desirous of informing those constituents as to how you stand on important matters now so vital to the welfare of this State and to the Nation. Therefore, I request that you check Yes or No to the enclosed questionnaire, a copy of which will be given to each constituent, without comment, in order that he or she may the more intelligently vote at the coming election."

Question No. 1

Are you for up-to-date, efficient Local, State and National Governments at the least cost to the tax-payer with elimination of all waste? Yes—No

Question No. 2

Are you for balancing the budget of the cost of Local, State and National Governments by effecting economies and not by increased taxes? Yes—No

Question No. 3

Are you for a "pay as we go policy" in Local, State and National Governments? Yes—No

Question No. 4

Are you for Government being kept out of business? Yes—No

Question No. 5

Are you for immediate payment of the Bonus? Yes—No

Question No. 6

Are you for restriction of Federal expenditures to reasonable and adequate relief of only those Veterans who were actually disabled while in the service of the United States? Yes—No

Question No. 7

Are you in favor of lowering the present tariff? Yes—No

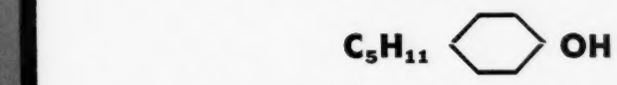
Question No. 8

Are you in favor of continuance of the present Prohibition Laws? Yes—No

The questions asked certainly require but a simple yes or no, but they hardly come under the category of the famous "Are you still beating your wife" type of interrogation. They will embarrass only those office holders and candidates who are constantly attempting to carry water on both shoulders, of course, endeavoring to please everybody. They will help the average voter to pin candidates down to specific answers.

NEW INDUSTRIAL AMYL COMPOUNDS

PENTAPHEN
(p-Tertiary Amyl Phenol)



Pentaphen condenses with aldehydes to form a varnish resin which is completely soluble in drying oils. Varnishes made with this resin offer maximum durability under all tests.

AMYL AMINES . . . . . $C_5H_{11}NH_2$
$(C_5H_{11})_2NH$
$(C_5H_{11})_3N$

These Amines are very basic organic liquids. Their novel solvent properties are valuable where miscibility is a problem. Two organic liquids which are insoluble in each other sometimes may be made miscible with the use of a small amount of Amylamine.

AMYL MERCAPTAN . . . $C_5H_{11}SH$
DIAMYL SULPHIDE . . . $(C_5H_{11})_2S$

Amyl Mercaptan, in particular, is valuable as an odorant or warning agent for use in odorless natural or artificial gas. There is a variety of possible uses for these sulphur compounds in the preparation of organic derivatives.

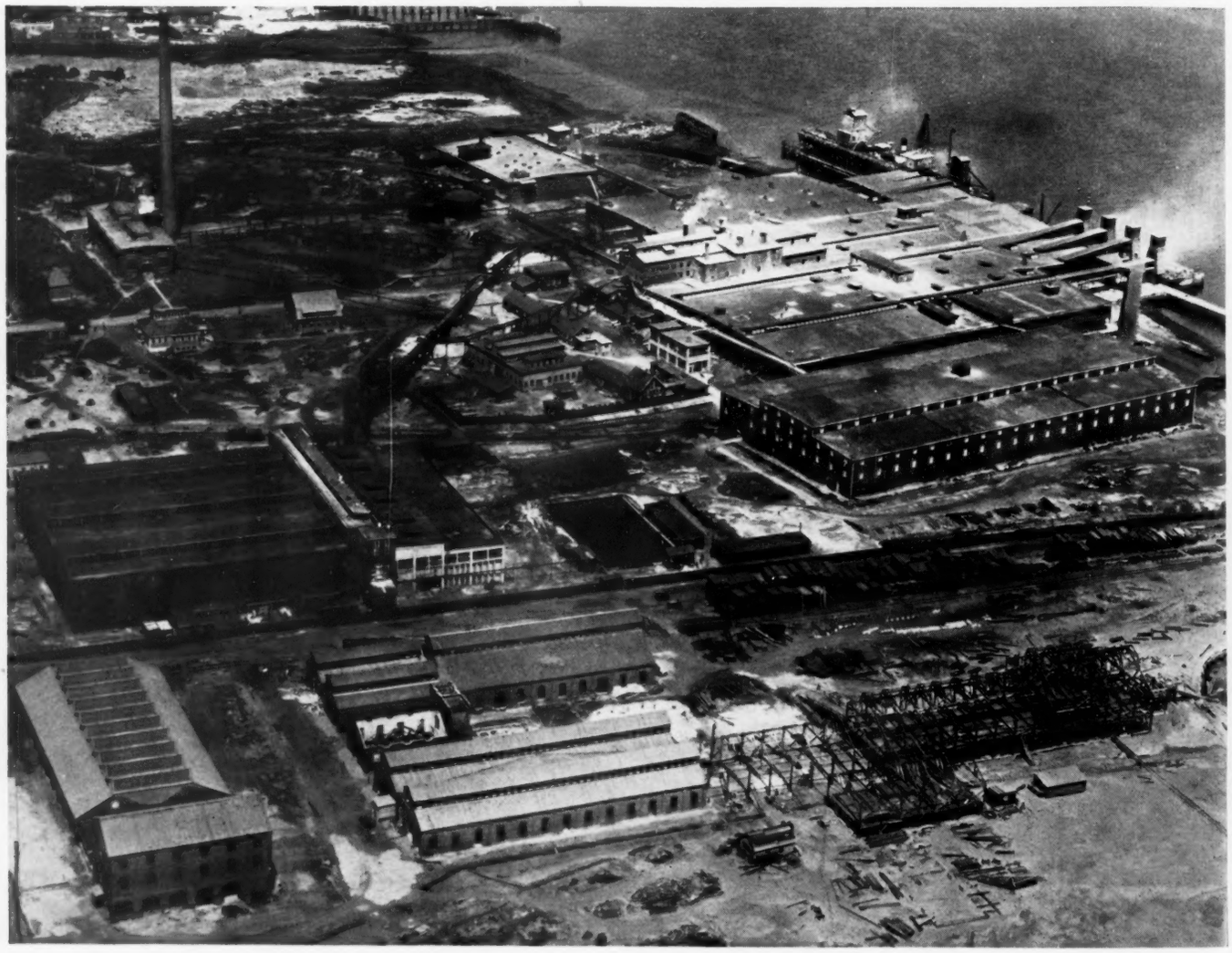
SHARPLES TRADE MARK SOLVENTS

THE SHARPLES SOLVENTS CORP.
2301 Westmoreland Street Philadelphia, Penna.

CHEMICAL

The Photographic Record

Are you "air-minded" and do you know your chemical plants? At the left is one which has changed ownership several times, yet has not taken part in the big merger movement. Below is a fertilizer factory which you can see from the Empire State Tower

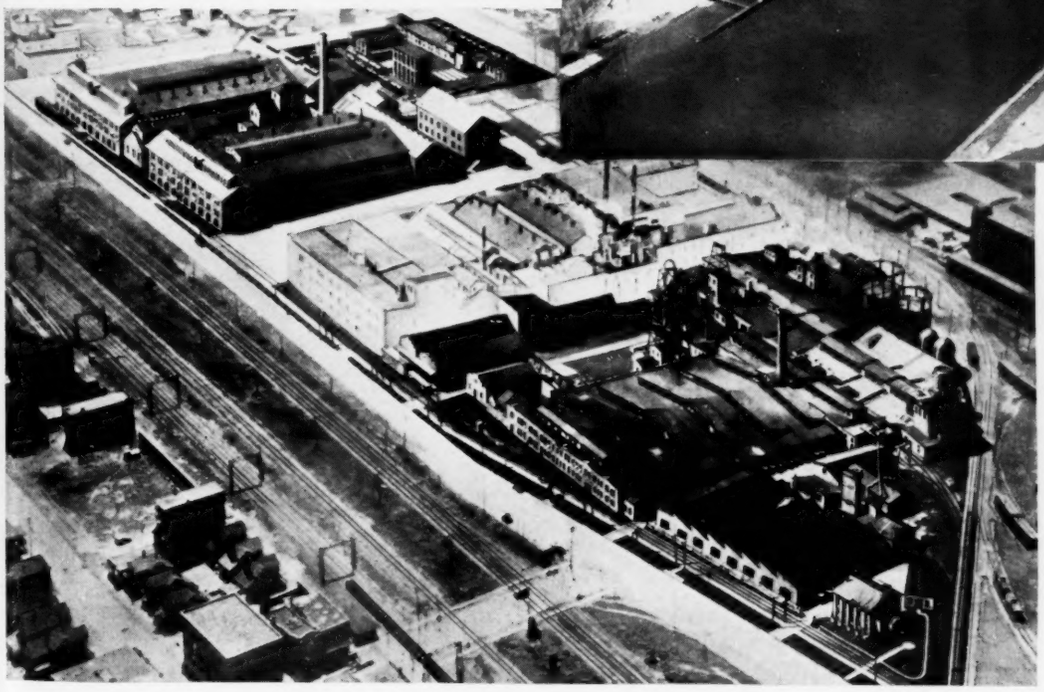


NEWS REEL

of Our Chemical Activities

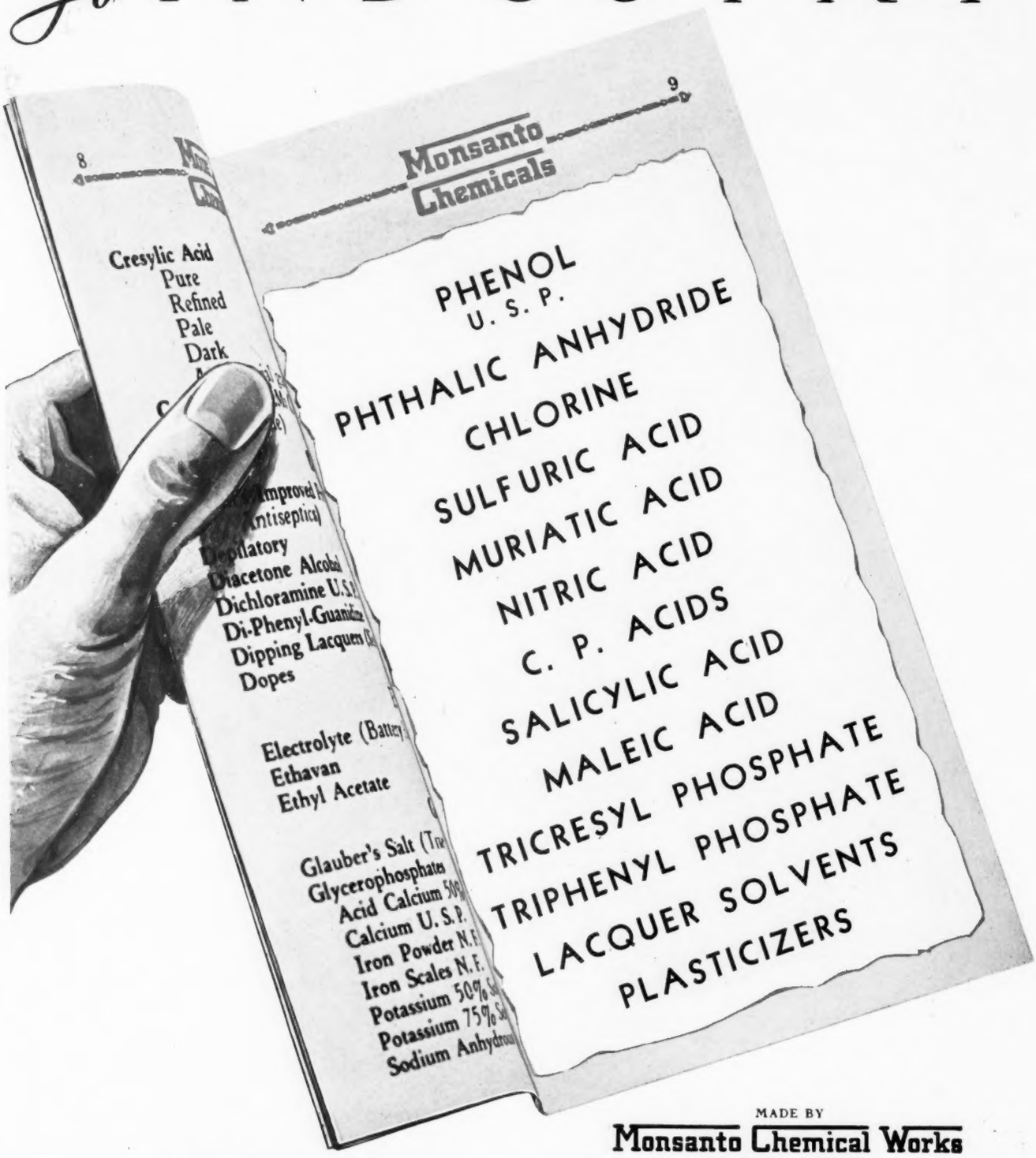
This is almost a memory test for the photograph at the right is of a new plant in a new chemical section of the country which has been widely photographed, but probably not one of our readers in fifty has been within fifty miles of this operation

At the right, one of the old established chemical enterprises which not so long ago had a fire, and which has been rebuilt with several units (notably the sulfuric acid plant) famous and often written about as being quite the last word in layout, design and equipment



At the left is one of the plants of one of the largest American alkali producers, the pioneer operation of its kind, and today one of the most important producing units in the industry in this country—now if you want to know the answers—turn to the "We" page facing the inside back cover

For INDUSTRY



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Monsanto CHEMICALS OF QUALITY Monsanto ST. LOUIS, U.S.A. **Chemicals**

Caustic Soda

An Industrial Chemical of Laboratory Purity

THE per capita domestic consumption of caustic soda in the year 1931 was approximately ten pounds. This consumption of about 600,000 tons was widely distributed and nearly all of it was in four forms, flake, ground, solid and solution. All was of domestic manufacture and derived by two processes, namely, (1), the treatment of sodium carbonate, either natural or manufactured, with lime, and (2), the electrolysis of sodium chloride. The manufacture by either method required chemical engineering of a high order. The cheapness of the product, and it is too cheap; the high alkalinity value; the ease with which it can be applied to the use; the large requirements for chemical, paper, petroleum, rayon, and soap manufactures made this large tonnage possible.

Caustic soda in solution is at least 2000 years old, and solid caustic soda outside the laboratory has its eighty-eighth birthday this year. Its history since 1844 is not large considering that chemical substances are more written about than other manufactures. The available record deals largely with how to make it, and the scanty economic history shows the neglect common to so much of the chemical literature. From such records as are available, it appears that the English paper, soap and textile industries began to take increasing quantities of solid goods after 1853, substituting it for solutions made as wanted and for soda ash. This is remarkable considering that paper, soap, and textile industries were then black arts and included practices worthy of an astrologer. The chemical industry in continental Europe and England then had no mental alkali pictures beyond lime and soda ash. The United States had no alkali industry of any importance until 1882 and as recently as 1900 imported great quantities of solid and ground caustic soda. Soda ash then and now was the dominant factor. Being wise after the event, it can be said that the LeBlanc soda ash process and later the Solvay soda ash process largely occupied the time of the alkali industry to the exclusion of other matters. The growing needs of petroleum refining, and later the rise of the rayon industry greatly increased the caustic soda consumption, and contributed largely to about 250% increase in consumption in the United States in the last decade. No other alkali has seriously threatened caustic soda within its modern life for a given technical purpose. When something intrinsically better is available, caustic soda will suffer accordingly. It is having a long and reasonably healthy life and over a fifty year period has largely replaced caustic potash.

The rise of the electrolytic chlorine industry after 1890 in Europe and after 1893 in the United States brought a new caustic soda method of manufacture into being. The caustic soda makers perceived what was true then and now, that the chlorine must be disposed of, and has a much narrower field of use than alkali. To the extent, however, that chlorine was made, the equivalent caustic soda, about pound for pound, went into the market and was sold. As the uses for chlorine gradually increased, the production and sale of electrolytic caustic soda increased. In the United States the electrolytic caustic soda is now about one-third of the total caustic soda production.

As said before, solutions of caustic soda are over 2000 years old. They were made in remote times by treating natural impure soda with lime, and much

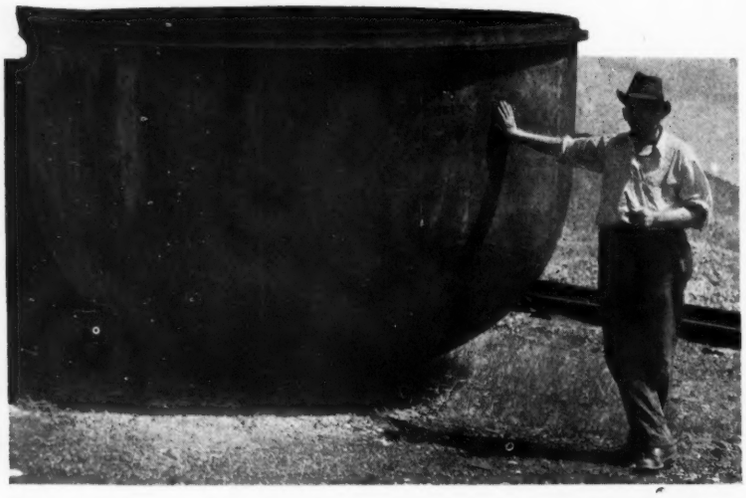
later by treating LeBlanc process soda ash with lime, then by treating Solvay process soda ash with lime, and lastly by the electrolysis of sodium chloride. Numerous other processes have been suggested or tried, but only the four named above have been found practical. The crude product of the ancients from natural soda and the nearly modern manufacture from LeBlanc soda ash need not be dwelt upon. The introduction of solid caustic soda in England about 1853 was a red letter chemical day, because for the first time the consumer did not have to be an alkali maker and could buy a very strong alkali which, if stored in a sealed package, would keep indefinitely. Solid caustic soda derived by all four processes mentioned above requires substantially the same apparatus and procedure, as all four processes start with weak caustic soda liquors. These liquors must be rid of their water and a large part of their impurities, and the modern history of caustic soda is largely that of the successive improvements in evaporators, pots and other apparatus to accomplish these necessities. The chemist could make on a large scale an impure product relatively low in caustic soda, but it required the engineer to achieve the fine modern product. No caustic soda consumer today would buy the goods of the grade sold even twenty years ago except at a price concession. In the earlier days solid caustic soda of 60% sodium oxide content was the best that could be had because the present makers' equipment was yet to be invented. Gradually as better apparatus became available the sodium oxide content rose until now the standard for solid is 76% sodium oxide content; the goods are waterless and contain upwards of 98% caustic soda. The American passion for colorless or white substances probably had something to do with improving the appearance of solid caustic soda. It was sometimes a dirty grey, sometimes brownish or reddish. These discolorations were due to impurities, and while methods of improving color by removing the impurities had been known for many years, the maker and consumer were not critical. The custom of shipping ground caustic soda in large wooden barrels gave way to the present sheet iron drums for solid goods. No neater package has ever been invented, and it promptly became a part of the petroleum industry as a free container for tar, and a source of income as scrap by other consumers.

Flake caustic soda is readily made on a flaking machine and differs from the so-called solid only in its physical form. It is easily handled, dissolves quickly, and because of its form, has distinct advantages for many uses.

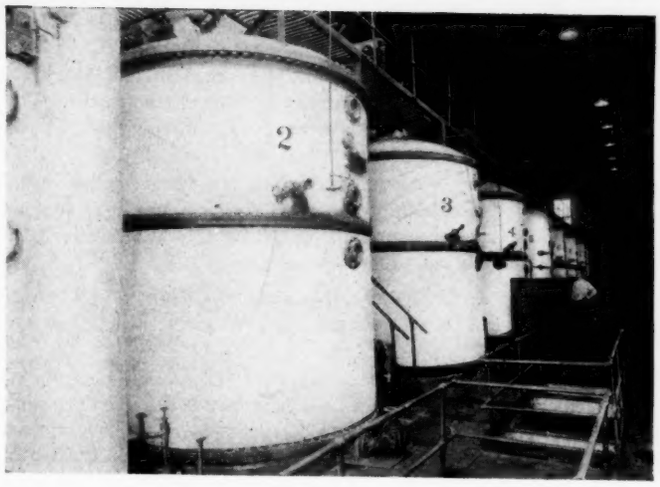
Solutions

Solutions as mentioned before were long made on the spot and as required. The invention of the glass carboy did not stimulate the alkali plant production of solutions. The LeBlanc and Solvay process plants apparently found out early that the consumers who could use caustic soda were well disposed to buy it rather than make it with soda ash and lime. This was especially true where there were plenty of technical uses requiring strengths over 10% by weight, which strength is all that could be had by causticizing soda ash with lime without resorting to evaporation and other apparatus. When the electrolytic cell method became available, only such consumers as could arrange the chemical economics of chlorine and soda, either in their own consumption or that of other nearby users, became electrolytic makers. The World War gave an impetus to such installations, but their number was few and their output has at no time been a large factor in caustic soda consumption. No additional consumer installations have been made since the World War. In the case of pulp and paper plants using soda processes and recovering alkali wastes, the practice of recausticizing with lime is common, but here, again, the low strength of the liquors makes shipment of solutions impractical.

In the last decade in the United States the use of strong solutions has been increasing rapidly and steadily. As first conceived, it was held that the user could determine the freight differences and estimate that the handling costs were more favorable to solution than to solid. There was also a differential of cost in favor of the solution. Tank cars holding from



A good idea of the scale of operations may be gleaned from the size of this caustic soda finishing pot



The severe corrosive action encountered in caustic soda production has been largely eliminated by the use of pure nickel seamless tubing and by the construction of evaporators and other equipment made of the newer metals, particularly monel

25 to 30 tons and 50 to 60 tons of solution, and equipped with heating coils were introduced. With free engineering service furnished by the caustic soda makers, at least four safe ways of unloading caustic soda solutions were devised, and it was made possible to unload the containers no matter how cold the temperature or the physical location of the consignee's storage. From experience the users learned of additional economies in the differences in handling, not the least of which was more safety to the workmen. Very good pamphlets containing all the necessary information for unloading solutions have been made available, and exemplify one great change that has taken place in selling chemicals. Until very recent times, the chemical industry printed matter was not much more than a calling card. The salesman is now supplemented with technical data and either an engineer or a plumber. This is costly and would probably be impossible except for economies in manufacture. It is certainly not reflected by any real increased cost to the consumer.

It was inevitable that the quality of caustic soda made by either method would improve because of competition, better raw materials, and better equipment. It is both odd and true that those who wrote long treatises on the manufacture were not visibly concerned about quality. A comprehensive search of the trade papers and technical literature of the industries using caustic soda disclose almost nothing about quality. Objections, if any, must have been largely vocal. Besides, it was not good form to talk too much about your process and the average salesman, until recent times, was not trained to learn why the goods were used and how they were used. It was the spacious Victorian age and has gone, never to return.

When the electrolytic caustic soda became available, the contemporary writings disclosed little of importance about quality. A few wild enthusiasts thought the new process would displace the old, but as said before they overlooked the disposal of the chlorine. The soda ash makers had a rival only to the extent that the chlorine could be sold. In the United States the domestic products were replacing the imported goods. The American electrolytic industry had no importance before 1900, and arrived at a time when the domestic market absorbed its output with little disturbance.

In 1909 the first American liquefied chlorine gas was produced for sale, and the slow but steady replacement of bleaching powder began. This substitution of bleaching powder by liquefied chlorine gas did not alter the output of caustic soda, but it was otherwise a great change to be financed and absorbed in an industry requiring two dollars of capital for a dollar of product annually. Two years later the first American rayon manufacture started, and this new industry soon demanded a better grade of caustic soda. It must be remembered that at this time, 1911, the United States had no organic chemical industry of any importance. The World War provided one. Had there been an organic chemical industry in the United States prior to the beginning of the rayon industry, it is an interesting speculation as to what a dye industry would have required in the purity of its alkali requirements. The prolific German patenting of that era does not disclose an answer, and patents constituted the greater part of the literature. The art of manufacture was not discussed.

About coincident with the rapid growth of the new rayon industry in the United States came a slight increase in the caustic soda content bringing diaphragm cell and soda ash caustic soda closer to the strength secured with the mercury type electrolytic cells. The World War arrived and absorbed the energies of all makers, and the caustic soda supply was supplemented by causticizing California desert natural soda ash. With the war over, the competition for a declining demand spurred the makers to improve their products or forced them to take less money for their goods. Among other things, the old practice of selling specially priced "bottoms," i. e., very impure scrapings from the bottoms of their pots was gradually abandoned and the bottoms were compelled to yield more good soda. The entry of two soda ash makers into the manufacture of electrolytic chlorine and caustic soda with diaphragm type cells, the rapid

rise in the use of solutions, and improved products both solid and solutions, all happening in the last decade, greatly changed the market situation.

To meet the demand for higher quality, the diaphragm cell caustic soda makers had only to sharpen their manufacturing wits and turn out a product containing less impurities, including sodium chloride. It has been done admirably and so much so that goods far beyond the technical needs of most consumers entered the market. It must be admitted, however, that the manufacturing cost to all concerned is increased. The consumer won, if it is conceded that he really needed goods which achieved the status of material between technical and C. P. grades of numerous chemicals in every day use. In the absence of very exacting consumer specifications, the several makers of caustic soda are all on equal footing. All can furnish goods as required by specifications and most do.

The industry from the start has been cursed with the use of several standards of alkali strength owing to English trade customs based on now obsolete atomic weights. The American industry is fast putting itself in a sensible position by selling caustic soda, either on a basis of actual alkalinity or sodium oxide content expressed as caustic soda. The consumer pays for what he gets. If all chemical products were as good as caustic soda, delivery for delivery, and the consumer could be made to pay for their worth, it would be a happy day for the chemical makers.

The Last Woad Crop

For the first time in many centuries no woad is being grown in England this year as a commercial crop. Ever since the availability of Indian indigo the woad industry has been a dying one, but it has lingered on in this country with remarkable tenacity. In France, it is understood that the last woad crops were harvested in the 'eighties. By 1892 only four woad-growing farms, all near Boston, in Lincolnshire, survived in England. By 1930 there were only two English farms growing woad; last year there was but one, while this year the land on the remaining farm has been planted with potatoes and sugar beets. It is believed, though, that the machinery for preparing the dye from the plant is being kept, in case the demand should be renewed when present stocks have been exhausted. Woad is not used today as a dyestuff by itself; it finds employment to a small extent as a constituent of the fermentation vat still employed in rare instances, despite the overwhelming progress of the hydrosulfite process, in dyeing wool with natural and artificial indigo. The story of woad and the woad industry is a fascinating one; the use made of it by the Early Britons for dyeing their skins blue in times of war is familiar to every schoolchild beginning the study of history. The word "woad" itself is derived from the Saxon "wad," and ultimately from Woden, the God of War. The sixteenth century appears to have seen the palmiest days of the woad industry in this country, for it was a period when large quantities of the dye were required by cloth manufacturers, and farmers were recommended to extend its cultivation. As a plant, woad, in a wild or semi-wild state, will probably survive, for in fields near sandpits and chalk quarries its bright yellow blooms are not infrequent countryside objects in July.

The Industry's Bookshelf

The Commercial Problems of the Woolen and Worsted Industries, by Paul T. Cherington, 255 p., published by The Textile Foundation, Commerce Bldg., Washington, D. C. $2.50.

A study of the problems confronting the woolen and worsted industries and an attempt to approach the questions in a scientific way. Contains a program for betterment formulated for discussion under ten definite headings.

Relief from International Income Taxation, by John G. Herndon, Jr., 311 p., published by Callaghan & Co., Chicago. $5.00.

A history of the movement to prevent the double taxation of income internationally. The book is largely based upon the proceedings of and data gathered at the meeting of government experts on double taxation at the League of Nations' Conference held in Geneva in 1928.

Industrial Management, by E. C. Robbins and Fe. Folts, 757 p., McGraw-Hill Book Co., N Y. City. $5.00.

A book designed for beginners in courses of industrial management and containing hundreds of cases of actual problems of management involving the various trends in modern industry and the problem of managerial control.

Pathways Back to Prosperity, by Charles Whiting Baker, 351 p., published by Funk & Wagnalls, N. Y. City. $2.50.

Written as the author points out from two viewpoints—one, that of the engineer and the other, the economist. Mr. Baker is certain that this is no mere return of the cyclical depression period but an entirely new condition, wrought mainly by technological unemployment. He believes that better times are in store for us, but that we must be willing to adopt a new viewpoint. Recovery lies mainly along the line of a more general distribution of the wealth which our machines are producing. A book distinctly above the average of the flood of similar works appearing in the last six months.

The Microscope, by Simon Henry Gage, 586 p., published by the Comstock Publishing Co., Ithaca, N. Y. $4.00.

The 15th edition of this recognized standard work has been completely reset and its value greatly enhanced by a thorough revision and the addition of a chapter on the Ultra-Violet Microscope and its use. Special emphasis has also been given to "the physical analysis of structure" by means of the darkfield, the ultra-violet, the polarizing microscope, and the micro-spectroscope.

Company Booklets

J. T. Baker Chemical, Phillipsburg, N. J. The September "Chemist-Analyst" features an article by Eugene W. Blank on Micro-Molecular Weight Determination by Boiling Point Method."

Glycerine Producers' Association, N. Y. City, a new anti-freeze booklet designed to acquaint dealers with all the technical and economic advantages of the use of glycerine in automobile radiators. It is really a textbook for the garage or service men.

B. F. Goodrich Rubber, Akron, a new booklet discussing line of rubber paints developed recently. Titled "Acidseal Paints" the bulletin is a manual of recommendations for paint problems and tells about rubber derivatives that minimize the corrosive action of acids and alkalies on materials.

Philadelphia Quartz, 121 S. Third st., Philadelphia, has just issued a new booklet on use of silicate of soda for testing and lining cooperage. Of interest to shippers of liquid or semi-liquid products.

Sharples Solvents, 23rd., and Westmorland sts., Philadelphia, is distributing technical data sheets on the new amyl compounds.

Safe Handling of Chemicals

By Warren N. Watson
Secretary, Manufacturing Chemists' Association

SAFETY work from the chemical viewpoint may be grouped under three general heads: *first*, precautions in manufacture; *second*, safety in transportation, which is primarily a problem of containers and packages; and *third*, precautions for and by the consumer which follow under two heads, (a) the industrial consumer and (b) the ultimate consumer. As the industry is fundamentally a producer of materials for further manufacture only a minute fraction of the total consumption of chemicals reaches the ultimate consumer as such. The latter class includes such products as medicinals, cleaning preparations, and insecticides. This paper will be largely confined to chemical safety work other than that involved in chemical manufacture.

There are certain fundamental principles—most of which have been thoroughly tested by experience—available for the protection of the *ultimate* consumer of chemicals and chemical products. While some of these are required by law, others have been developed by the manufacturers in the interests of safe-guarding the consumers of chemical products.

These principles include: (1) Symbols; (2) Poison label; (3) Characterization by color, odor or taste; (4) Special Agencies; and (5) Informative and Precautionary Instructions. In the light of experience no one of these is a cure-all for accident prevention. Each has distinct advantages and clear limitations for a particular field or class of products and only by the intelligent use of these agencies can the desired result be accomplished.

The outstanding symbol is the skull and crossbones. In the mind of the general public this is associated with highly toxic products. Careful study shows that for many people who disregard poison labels and instructions, the skull and crossbones is an effective warning. This may appear to be a commentary on human laziness, but we must deal with facts and not theories in safety practice. The skull and crossbones occupy an important part in our social structure and efforts to extend its use to relatively-harmless or harmless products can only result in public indifference to this important symbol and tend to destroy its warning value. For example, if all gasoline carried the skull and crossbones, how long would it be before the public reaction toward this symbol would be greatly reduced?

In recognition of the value of a symbol as an element of warning we are now developing a symbol for "inflammables" along the lines of a scarlet red flame and are considering the development of a symbol for volatiles.

Under the symbol class falls the use of a picture in lieu of language. Our Carboy Committee, for example, is developing a cut showing the right and the wrong way to remove a carboy stopper, as a safety measure for the consumer. The use of a cut recognizes the fact that certain workmen handling carboys have but a limited knowledge of the English language.

The use of the word "poison" is required by a multitude of State and Federal laws and the present tendency is to extend this word to other products. Great care should be exercised in labeling additional products "poison" in order to preserve the warning value of this word as applied to products involving a genuine hazard to health and life.

Warning Colors

The application of these principles is in general relatively new. The use of color, while limited, is not new; for example, an old Mississippi Poison Law requires that arsenic shall not be sold (except to physicians) without mixing with soot or indigo. Two important applications of color as a protective warning are in gasoline containing lead tetraethyl and also for methanol sold for the anti-freeze trade. The use of color in these two products has worked out successfully. The indiscriminate extension of color to a variety of poisons is to be seriously questioned due to the fact that the use of color in foodstuffs is extremely common and is rapidly increasing. One can buy blue, pink, and green bread in Washington, and you are all familiar with the extensive use of certified food colors in food products. Our Association conducted last summer, in cooperation with Federal and State Experimental Stations in twenty-two states, field tests with calcium and lead arsenates, colored with different dyes and pigments, in order to ascertain the feasibility of the use of color for white insecticides.

The practice of characterization by odor and taste is limited. The voluntary formula adopted by the manufacturers of methanol in cooperation with the U. S. Public Health Service includes, in addition to color, chemical products which impart a distinctive disagreeable odor and taste and also an emetic. The use of strong odors in general meets with strong

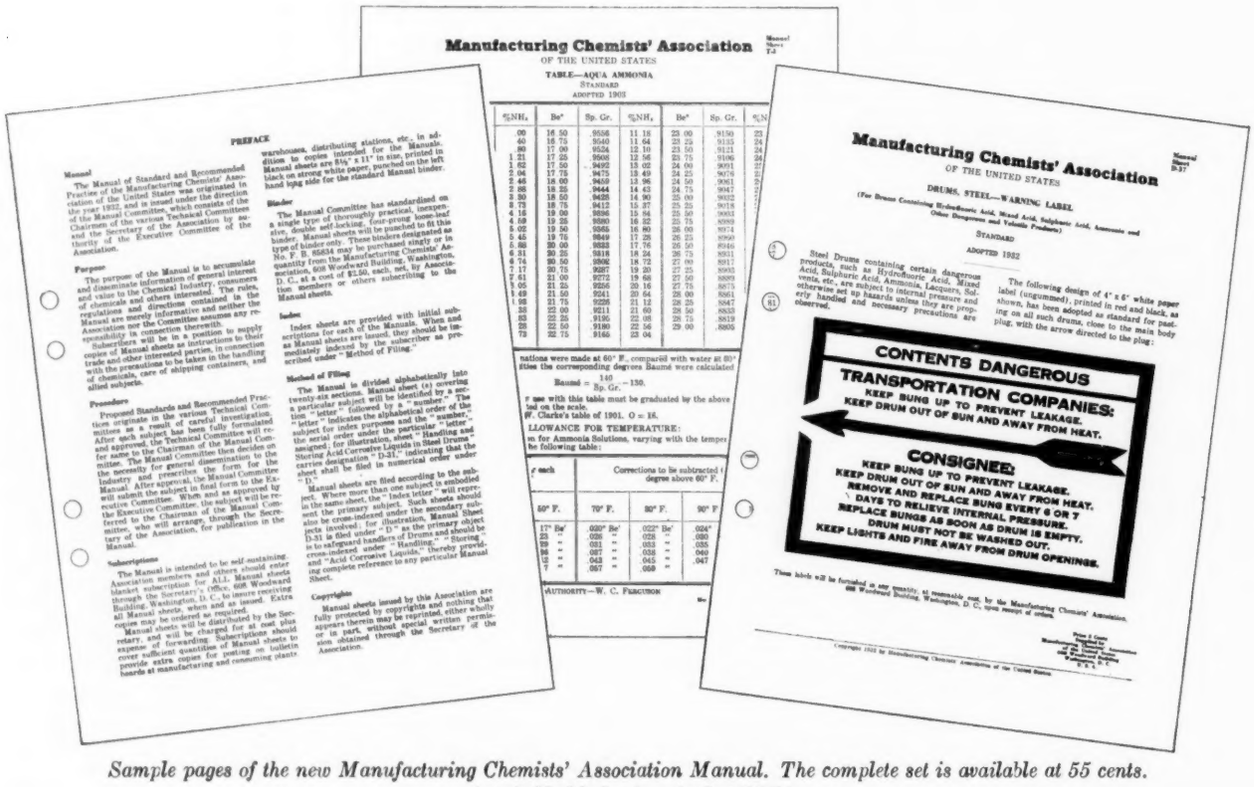
opposition from the consumer. Denatured alcohol is another item which has been treated with products possessing a disagreeable odor and taste. Recently I ran across a synthetic organic compound which even in most minute proportions gives a powerful biting sensation when placed on the tongue. This would not be feasible for products used in cuts and open wounds but might have application to certain articles.

Under this category falls a variety of devices, such as the use of an emetic in methanol, the use of a string in bichloride of mercury tablets to reduce the possibility of a tablet being swallowed by mistake, and the preparation of tablets of a different shape and color such as a triangular tablet in contrast with the circular tablet used for internal preparations. In addition, the prohibition of sales of a poisonous article in broken unlabeled packages has merit. Concretely this would mean that the country store could not sell calcium arsenate from a one-hundred pound drum in unlabeled bags containing a few pounds which might conceivably be mistaken for foodstuffs.

The use of precautionary language is bound to increase as the diversity of products expands. To be effective, it must be clear, accurate, brief and readily understandable. For example, it has been suggested that a skull and crossbones be placed on carbon tetrachloride containers. A more careful examination of the facts shows that this conclusion overlooks a fundamental factor: carbon tetrachloride is now used in the household and also in commercial dry cleaning establishments as a substitute for highly inflammable petroleum solvents, such as gasoline; in fact, it was first developed for this very purpose. The very high death rate from gasoline fires in the household clearly shows the advantages of a non-inflammable solvent. The practical effect of labeling carbon tetrachloride with a skull and crossbones and the poison label would be to drive this article out of the household and result in a readoption of hazardous gasoline, with a subsequent increase in the destruction of human life. The precautionary statement for tetrachloride containers along the following line "Use in a Well Ventilated Place" would appear to meet the needs of all. The replacement of air by any gas or vapor results in asphyxiation or toxic effects (or both); consequently adequate ventilation is the essential message to the consumer. This recognizes the principle that adequate ventilation should be provided when volatiles are used.

The M. C. A. is in its sixty-first year and one of our principal activities has been a continuous research program on chemical containers and the handling of chemical products. Progress in the field of chemical containers has kept apace with the remarkable developments in the chemical industry itself. This program necessarily has a direct relation to safety and it has been our consistent policy to place safety first in the development of new containers. The safe shipment of chemicals is primarily a problem of safe containers, plus a knowledge of how to handle them.

In the furtherance of our research work we have special committees—the Steel Barrels and Drums Committee, the Carboy Committee, the Tank Car Committee, the Poisonous Articles and Miscellaneous


Manufacturing Chemists' Association
OF THE UNITED STATES
TABLE—AQUA AMMONIA
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CONTENTS DANGEROUS
TRANSPORTATION COMPANIES:
KEEP BUNG UP TO PREVENT LEAKAGE.
KEEP DRUM OUT OF SUN AND AWAY FROM HEAT.
CONSIGNEE:
KEEP BUNG UP TO PREVENT LEAKAGE.
KEEP DRUM OUT OF SUN AND AWAY FROM HEAT.
REMOVE AND REPLACE BUNG EVERY 6 OR 7
DAYS TO RELIEVE INTERNAL PRESSURE.
REPLACE BUNGS AS SOON AS DRUM IS EMPTY.
DRUM MUST NOT BE WASHED OUT.
KEEP LIGHTS AND FIRE AWAY FROM DRUM OPENINGS.

Sample pages of the new Manufacturing Chemists' Association Manual. The complete set is available at 55 cents. A suitable binder is priced at $2.50

Packages Committee, and the Manual Committee—each devoted to study of a special type of container.

I am going to discuss briefly the work of our Manual Committee. A survey of chemical handling revealed the necessity of further precautionary instructions for the *consumer* of chemicals in a uniform coordinated form and our Manual Committee has directed its efforts to that end. The purpose is to disseminate information to the public and interested parties on procedure and precautions to be observed in the handling of chemicals and their containers. Our Manuals are written for the consumer, the producer and the shipper, with special emphasis on safety. Each of the Manuals on procedure is copyrighted by the M. C. A. and they are available to the public at a nominal charge through our Washington Office.

The Bureau of Explosives was organized in 1906 by the railroads to formulate regulations covering the transportation of explosives and dangerous articles to reduce hazards of their transportation. The Bureau acts in an advisory capacity to the Interstate Commerce Commission and also polices rail shipment of dangerous articles and functions also on the lines of inspection and instruction. Our technical committees have cooperated very closely with the Bureau of Explosives and many of its problems are referred to our research committees for investigation and opinion.

The Act of 1908 authorizes the I. C. C. to promulgate regulations on the transportation of explosives. In 1911 the I. C. C. was authorized to suspend practices of the carriers which were unlawful or unsatisfactory. The Act of 1921 authorized the Commission to issue regulations for the safe transportation of explosives and dangerous articles including inflammables, oxidizing materials, corrosives, compressed gases and poisonous articles, with penalties for violation. These regulations are binding on common carriers engaged in *interstate commerce* by rail, and upon all persons making shipments via such carriers. The regulations are revised from time to time to keep up with the progress of the chemical industry and they include detailed specifications for containers.

The principal source of accidents arising from carelessness has been on the part of the industrial and ultimate consumer. We have, accordingly, found it desirable in certain cases to prepare a manual for the consumer and a separate manual for the manufacturer. I am going to take a few concrete examples of our manuals to illustrate the scope of this work.

Sulfuric acid is shipped in carboys, steel drums and tank cars. In the handling of sulfuric acid and mixed acid in steel drums, one Manual (D-30) has been published for the shippers and a second Manual D-31) for the consignees. Manual D-31 for consignees covers explanatory statements as to the cause (of explosions by hydrogen and storage without venting. Specific instructions are given under the heads of handling, storing, venting, the removal and replacement of the body plug, the avoidance of flame, emptying, draining and closing, and internal washing. The instructions under each of these headings is very brief and the manual sheet can be posted in the rooms of the consumer plants where the workmen handle these drums. Foremen can instruct their workmen and the workmen themselves also have access, under these conditions, to these instructions. Manual D-30 for shippers of sulfuric acid in steel drums is more comprehensive and covers such topics as inspection, storage, cleaning, testing, repairing, filling and outage.

For the safe transportation and handling of drums containing acids and volatile products, we have developed the M. C. A. Standard D-37 Label which, in actual use, is pasted next to the bung on the steel drum. There are first, two brief statements for the benefit of the employees of the transportation companies, and second, there are seven short statements for the consignee. These labels are available to the public at a small cost and are finding extensive application.

Manual S-25 covers bulk shipments in box cars of nitre cake, giving loading instructions, treatment of cars before loading and treatment of cars after unloading in order to leave the car in proper condition for the shipment of other freight.

Manual P-30 covers the cleaning out of box cars after unloading the I. C. C. Class "B" poisons, which include such products as calcium arsenate and lead arsenate.

We now have under preparation manuals for the handling of carboys; for the unloading of acid tank cars covering both the sulfuric acid tank car and the rubber-lined tank car used for hydrochloric acid; and a manual for the consumer of arsenical insecticides containing instructions for their safe use.

The development of the manual will permit the coordination under one cover of safety measures for the handling of chemicals of all kinds by the shipper, carrier, and consumer in a convenient form and it is confidently believed the use of the Manual will result in a reduction of accidents.

In our safety work we have always attempted to make a careful scrutiny of the viewpoint and the reactions of the persons to whom precautionary warning and information is directed. In this connection one thought must always be borne in mind in safety work, and that is the *human factor*—for efforts which do not recognize the necessity of a clear direct contact with the individuals for whom the information is intended will not only miss the bull's eye but the target itself.

Fighting Waste

By Admiral Richard E. Byrd

Leaders in the fight on government waste and unfair taxation. Seated: Admiral Byrd, Chairman pro-tem; Archibald Roosevelt, National Secretary pro-tem; standing, Royal C. Johnson, Harold Beacon, Granville Clark, and George Rossetter

Keystone Views

IN ACCEPTING the Chairmanship of the National Economy League, the motive that prompted me more than any other was the realization of the terrific burden of taxation and the effects of such taxation upon our economic system, particularly as relating to unemployment.

The combined debt of our city, state and federal governments is now seven times as large as it was in 1913. It has reached the astonishing total of $30,000,000,000. The national deficit is nearly $3,000,000,000 and in order to balance the budget we have had to, in times of extreme stress and depression, increase taxation. Unless real effective action is taken this burden will have to fall more and more upon a larger majority of the people than ever before for the reason that income taxes, surtaxes and inheritance taxes cannot supply the large sums they have in the past.

We are faced with a still greater increase in taxation, which, unless corrected, will lead to even greater hardship than already experienced. If we cannot increase taxes without disaster, and if we must not increase our debts, then the only answer is for the cities, counties, states and the federal government to reduce their enormous expenditures.

The National Economy League was created in May of this year largely by ex-service men, most of whom saw service in France. It is in no manner limited to Veterans. Its non-partisan character and the need for its existence are evidenced by the men who have agreed to serve on its Advisory Council. These national leaders are Alfred E. Smith, Calvin Coolidge, Elihu Root, Newton D. Baker, General John J. Pershing and Admiral William S. Sims.

While the League has a broad program covering Federal, State and municipal economy, its first objective is to correct the abuses that have gradually crept into legislation affecting the Veterans.

In making an analysis of this subject, the National Economy League discovered that the Government is spending $452,000,000 annually in excess of just and equitable payments. In other words, this amount is being expended on account of Veterans who in no way suffered disability in line of duty. Furthermore, these payments are constantly increasing, and it has been estimated by the head of the Veterans' Bureau that by 1945 the expenditures on account of Veterans' legislation will have totaled $21,500,000,000—more than the total cost of the war. This is provided no new legislation is enacted or no repeal of the present laws obtained. These payments are in addition to those being made on account of the "Adjusted Compensation Act" or bonus law.

The number of casualties in the United States forces in the World War, including killed, wounded, gassed, and deaths from disease, was 325,000. The number of veterans now receiving compensation from the Government is 718,000. There are 395,000 veterans who are receiving allowances for disabilities avowedly having no connection with war service. Under existing laws, it is estimated by the Veterans' Administration, the non-war cases will increase to 561,000 by June of next year and to a much larger number thereafter.

This condition is nothing more nor less than a dole for a very small percentage of the population. We have created in this country a privileged class and have burdened ourselves with an enormous annual charge, amounting to about 12 per cent of our present budget, to support this class and we are placing upon rising generations a burden that is unfair and uncalled for. Thirty million young men and women have come of age since the end of the World War, about one-fourth of our population. What is to be their reaction to the waste and extravagance that have characterized our veteran policy?

Financial Aspects of the Electrochemical Industries

By C. L. Mantell

RELIABLE estimates show a purchase of approximately 200,000 kw. capacity of direct current machines annually for electrolytic service. With increasing use of alternating power, transmission systems and distribution networks, the electrochemical industries are calling for a greater and greater percentage of the total output of direct current machines. They constitute an important source of revenue for the electrical manufacturers.

An attempt has been made to bring out some of the financial aspects of the electrochemical industries. They hold an important place in the welfare of our nation and the tables and statistics in this paper are brought forward to emphasize this statement.

Periodically a survey of the economic situation and an inventory showing the existing state of things is enlightening. In this paper an attempt will be made to show the present size and economic importance of those industries ordinarily thought of as electrochemical. It is perhaps, surprising to note that the value of materials electrochemically produced, excluding metals electrochemically refined, amounts to $350,000,000 to $400,000,000 annually. The entire output of all the chemical companies of the United States is worth approximately $350,000,000,000 a year. The electrochemical industries are of the order of 10 per cent. of the output of all of the chemical and chemical engineering plants or process industries.

Far too often in our colleges and universities the study of electrochemistry is considered as a minor branch of physical chemistry. As such it is often taught by the professor of physical chemistry whose interest in electrochemistry may or may not be a forced one. Such a viewpoint brings forth courses in which laboratory studies of transference numbers, conductances, and physical measurements play a

Production, value, and power installations of major electrochemical products

Product	Production*	Value per Unit	Total Value	Power†	Total kw. needed x 10^3	Daily Power 300 Days/-Year	Kw. Installed
Sodium	10,000,000 lbs.	$ 0.19	$ 1,900,000	7.2 kw.-hr./lb.	72	240,000	10,000
Aluminum	229,000,000 lbs.	.22	50,380,000	12 kw.-hr./lb.	2,748	9,160,000	380,000
Magnesium	1,300,000 lbs.	.30	390,000	13 kw.-hr./lb.	17	60,000	2,500
Copper	1,500,000 tons			220 kw.-hr./ton	330	1,100,000	46,000
Cadmium	2,800,000 lbs.	.64	1,780,000	0.8 kw.-hr./lb.	2.3	7,700	320
Zinc	131,000 tons	90.00	11,790,000	3,000 kw.-hr./ton	393	1,310,000	54,600
Chlorine	500,000,000 lbs.	.02	10,000,000	1.5 kw.-hr./lb.	800	2,670,000	111,250
Caustic	840,000,000 lbs.	.025	21,000,000				
Carbide	400,000 tons	100.00	40,000,000	3,000 kw.-hr./ton	1,200	4,000,000	170,000
Silicon carbide	30,000 tons	100.00	3,000,000	7,500 kw.-hr./ton	225	750,000	31,000
Graphite	40,000,000 lbs.	.07	2,800,000	1.8 kw.-hr./lb.	72	240,000	10,000
Fused alumina	50,000 tons	90.00	4,500,000	3,500 kw.-hr./ton	175	550,000	23,000
H_3PO_4	41,412,000 lbs.	.09	3,700,000	0.8 kw.-hr./lb.	33	80,000	4,400
Ferrosilicon	174,000 tons	35.00	6,090,000	5,000 kw.-hr./ton	870	2,900,000	121,000
Ferrochromium	25,000 tons	200.00	5,000,000	4,000 kw.-hr./ton	100	340,000	14,200
Electric steel	803,000 tons	60.00	48,180,000	500 kw.-hr./ton	402	1,300,000	54,200
White lead	10,000 tons	150.00	1,500,000	450 kw.-hr./ton	4.5	15,000	500
							1,041,970

* 1 lb. = 0.4536 kg. 1 ton = 0.907 metric ton. † 1 kw.-hr./lb. = 2.2 kw.-hr./kg. 1 kw.-hr./ton = 1.1 kw.-hr./met. ton.

major part. Ordinarily, very little if any appreciation of the commercial and industrial electrochemical operations is gained.

In a recent book the writer used the following classification:

Table I *Products of electric furnace and electrolytic cell*

Product	Raw Material	Applications of Product
Alumina, fused	Bauxite (natural aluminum oxide)	Abrasives and refractories.
Alumina, pure	Bauxite	Insulating material; aluminum metal.
Aluminum metal	Bauxite	Electric power transmission cable; light-weight alloys for aeroplanes, automobiles and trucks; deoxidizing agent for steel; aluminothermic reactions; ammonal (explosives); acid containers; cooking utensils.
Aluminum, pure	Aluminum metal	Corrosion resistant coatings.
Beryllium	Beryl	Light alloys.
Bismuth	Lead refining slimes	Alloys.
Cadmium	Zinc electrowinning slimes	Alloys; plating.
Calcium	Calcium chloride	Special uses; radio tubes; lamps.
Calcium carbide	Lime and coke	Acetylene for welding, cutting and lighting; acetone, acetic acid; aeroplane dope.
Calcium cyanamid	Calcium carbide (nitrogen of the air)	Fertilizer; ammonia; cyanides.
Carbon bisulfide	Coke and sulfur	Solvent; insecticide; carbon tetrachloride; artificial silk (viscose).
Caustic	Water, salt	Soap; paper industry; explosives.
Cerium metals	Rare earth chlorides	Pyrophoric alloys; automatic lighters; tracer bullets and shells.
Chlorine gas	Water, salt	Bleaching; gas warfare, mustard gas, phosgene, chlorpicrin, silicon tetrachloride; explosives; chlorbenzol; water purification; surgery (Dakin solution); detinning; artificial plastics; hydrochloric acid; aluminum chloride for oil refining; sanitation.
Chrome yellow	Lead	Paint pigment.
Copper, pure	Crude copper	Electrical industry; brass.
Copper, pure	Copper ore	Electrical industry; brass.
Ferrochrome	Chrome ore	Special and high-speed steels; armor plate; projectiles.
Ferromanganese	Manganese ore and coke	Steel; permanganates.
Ferromolybdenum	Molybdenum ore	Special steels.
Ferrosilicon	Iron, silica rock, coke	Steel manufacture; hydrogen production.
Ferrosilicon-titanium	Bauxite	Steel deoxidizer.
Ferrotitanium	Titanium ore	Scavenger in steel manufacture.
Ferrotungsten	Tungsten ore	Special and high-speed steels.
Ferrovanadium	Iron vanadate	Special steels; automobile steels.
Frary metal	Alkaline earth chlorides	Bearing alloys.
Gold	Copper refining slimes	Jewelry; coinage; industrial alloys.
Graphite	Anthracite coal	Electrodes; lubricants and paints.
Hydrogen	Water, sodium hydroxide	Ballooning; hydrogenated fats.
Hypochlorite	Water, salt	Disinfectants; bleaches.
Iron, pig	Iron ore	Steel industry.
Iron, pure or "Swedish"	Pyrrhotite	Tubes and special steels.
Lead, refined	Crude lead	Alloys; fittings; acid chambers.
Lithium metal	Lepidolite, lithium salts	Light alloys.
Magnesium metal	Magnesium chloride	Flashlight powders; light-weight alloys; tracer bullets and flares.
Nickel, refined	Crude nickel	Alloys; plating industry; dairy equipment; utensils.
Nitric acid	Air	Explosives; fertilizers.
Oxygen	Water, sodium hydroxide	Oxywelding; oxycutting.
Ozone	Air	Sterilization of water; sanitation.
Palladium	Nickel refining slimes	Industrial alloys.
Perborates	Borax	Bleaching agents for textiles.
Phosphoric acid	Phosphate rock, coke and sand	Acid phosphates; cleaners; food products.
Phosphorus	Phosphate rock, coke and sand	Matches; phosphorus compounds; phosphor bronze; smoke screens.
Platinum	Copper refining slimes	Electrical uses.
Platinum	Nickel refining slimes	Catalysts; jewelry; industrial alloys.
Potassium chlorate	Potassium chloride	Primers; matches; dyeing.
Quartz, fused	Quartz rock	Silica tubes; heat-resisting materials; optical uses; lenses.
Rhodium	Nickel refining slimes	Industrial alloys.
Silicon	Sand and coke	Silicon steel; hydrogen for balloons; resistance units; silicides; silicon tetrachloride.
Silicon carbide	Sand, sawdust and coke	Abrasives and refractories.
Silver	Copper refining slimes	Jewelry; coinage; industrial alloys.
Sodium bichromate	Chromium salts	Dyeing; tanning.
Sodium metal	Caustic (Castner)	Peroxides; cyanides; bleaching; mining.
Sodium metal	Salt	Alloys; tetraethyl lead; organic synthesis.
Sodium perchlorate	Sodium salts, $NaClO_4$	Fireworks.
Tin, refined	Impure tin, tin dross	Tin plate industry; bronzes.
White lead	Lead	Paint pigment.
Zinc, pure	Zinc ore	Brass; galvanizing.
Zinc metal, pure	Zinc ore	Brass industry.

"Electrochemical industries may be roughly divided into several classes: first, those of an electrolytic nature, further subdivided into those of the electro-separation type, represented by alkali and chlorine, the electrowinning type, as represented by the copper industries in which the copper is produced by the leaching of ore, the large electro-refining group, of which electrolytic copper and nickel are examples, and the electrodeposition type represented by the electroplating and electroforming field; second, the fused electrolyte group, represented by aluminum, magnesium, and the alkali metals as examples; third, the electrothermal group, examples of which are calcium carbide, cyanamid, graphite, and the synthetic abrasives; fourth, the products of the electric furnace, which is used as a means of reaching elevated temperatures, such as the ferro-alloys, electric steel, and special alloys; fifth, the group which concerns itself with the conversion of chemical to electrical energy, as represented by the manufacture of batteries, of both the primary and secondary type; sixth, a minor subdivision which, as the result of oxidation or reduction in electrolytic cells, is devoted to the production of organic products; and last, those industries in which the primary interest is concerned with the action of the electric current in effecting reactions and conversions in the gaseous phase."

The products of the electric furnace and electrolytic cell are many and varied. They find multitudinous applications in our complex present-day existence. These products, their raw materials, and applications are tabulated for reference purposes in Table I.

Power is an important raw material for the electrochemical industries. The energy requirements for various products differ widely. For the more important substances the power needs, production per unit of power, and the operating voltages of the tank or cell are tabulated in Table II. These figures represent approximately present-day plant practice, as they have been gathered through the courtesy of the operating companies manufacturing the substances.

For materials other than those resulting from metal refining operations, the normal annual production, present-day value per unit, and total value of the annual production in dollars are listed in Table III shown on page 329. From the total production and the power required per unit, the total power in millions of kw. has been calculated, and the daily power on the basis of operation at the rate of 300 days per year. From this latter figure the installed kw. have been figured. The actual installed power in terms of capacity of electrical machinery is considerably higher, in some cases amounting to two or three times as much. The calculated installed power for the products included in the table is well over a million kw. When industries of minor importance not in the table are included—electroplating and similar plants, stand-by equipment, units used only

portions of the day, as well as other types of power machinery—it is estimated that the total installed power for electrochemical industries is larger than the total installed public utility power of all greater New York City. This figure is of the order of 3,050,000 kw. and runs everything in that huge metropolitan center.

Table II *Energy consumption of electrochemical products*

	Kw.-hr. per lb.*	Lb. per kw.-hr.†	Voltage per tank, cell or furnace
Alumina, fused	1 - 1.5	0.67 - 1	100 -110
Aluminum	10 - 12	0.08 - 0.1	5.5 - 7
Cadmium	0.8	1.25	2.6
Calcium	22 - 24	0.04	
Calcium carbide	1.3 - 1.4	0.71 - 0.77	
Carbon bisulfide	0.4 - 0.5	2 - 2.5	60
Caustic, diaphragm cells	1.16 - 1.43	0.68 - 0.86	3.4 - 4.2
Caustic, mercury cells	1.45	0.69	4.1 - 4.3
Chlorine, diaphragm cells	1.3 - 1.6	0.62 - 0.76	3.4 - 4.2
Chlorine, mercury cells	1.6	0.62	4.1 - 4.3
Copper, electrorefining:			
Multiple system	0.09 - 0.16	6.3 - 11	0.18 - 0.4
Series system	0.074	13.5	16 - 18
Copper, electrowinning	1 - 1.5	0.67 - 1	1.9 - 2.4
Ferrochromium, 70 per cent	2 - 3	0.33 - 0.5	90 -120
Ferromanganese, 80 per cent	1.5 - 3	0.33 - 0.67	90 -115
Ferromolybdenum, 50 per cent	3 - 4	0.25 - 0.33	50 -150
Ferrosilicon, 50 per cent	2 - 3.5	0.28 - 0.5	75 -150
Ferrotungsten, 70 per cent	1.5 - 2	0.5 - 0.67	90 -120
Ferrovanadium	2 - 3.5	0.28 - 0.5	150 -250
Gold	0.15	6.6	1.3 - 1.6
Graphite	1.5 - 2.0	0.67	80 -200
Iron	1.8 - 2.0	0.5 - 0.55	4 - 4.4
Lead	0.04 - 0.05	24	0.35 - 0.6
Magnesium, chloride process	8 - 13	0.08 - 0.125	6 - 9
Magnesium, oxide process	14 - 25	0.04 - 0.07	9 - 16
Nickel	1.1	0.9	2.4 - 2.5
Phosphorus	4 - 5.5	0.18 - 0.25	
Silico-manganese	2 - 3	0.33 - 0.5	90 -120
Silicon carbide	3.2 - 3.85	0.26 - 0.31	75 -230
Silver, Moebius	0.31	3.2	2.7
Silver, Thum	0.41	2.4	3 - 3.5
Sodium	7.1 - 7.3	0.13 - 0.14	
Steel, cold charge	0.25 - 0.4	2.5 - 4	85 -225
Steel, hot charge	0.05 - 0.2	5 - 20	75 -100
Tin	0.085	11.8	0.3 - 0.35
Zinc	1.4 - 1.56	0.64 - 0.7	3.5 - 3.7

* Kw.-hr. per lb. × 2.2 = Kw.-hr. per kg.
† Lb. per kw.-hr. × 0.4536 = kg. per kw. hr.

It is of interest to compare the size of individual electrochemical industries with the size of output and value of the most important heavy chemicals. These are shown in Table IV. It can be seen that electrolytic caustic, constituting 20 to 30 per cent of the total caustic production, is as big a business as that of anhydrous ammonia. Aluminum is about half the size of sulfuric acid and as big as ethyl alcohol. It may be remembered that sulfuric acid is often stated to be the measuring rod of civilization, and the degree of civilization of a country can be measured by its relative sulfuric acid consumption. Even at present disastrously low prices, electrolytic chlorine is twice as big as hydrochloric acid. Calcium carbide in its crude form means as much money as the entire sulfur business, while ferro-alloys are worth more money than all the lime produced for the chemical industries. Electric furnace phosphoric acid is about half the size of the hydrochloric acid industry in value

Table IV *Production of Heavy Chemicals*
(From Chem. and Met. Eng.)

Product	*Production**	*Value per Unit†*	*Total Value*
Anhydrous ammonia	173,600,000 lb.	13 cts./lb.	$ 22,568,000
Sulfuric acid	8,400,000 tons	$13.20/ton	110,880,000
Ethyl alcohol	107,000,000 gal.	48 cts./gal.	51,360,000
Lime	2,290,000 tons	$7.30/ton	16,717,000
Nitric acid	156,000 tons	$130/ton	20,280,000
Soda ash	2,680,000 tons	$25/ton	67,000,000
Sulfur	2,360,000 tons	$18/ton	42,480,000
Hydrochloric acid	255,000 tons	$22/ton	5,610,000

*1 lb. =0.4536 kg. 1 ton =0.907 met. ton. 1 gal. =3.785 liters.
†1 ct./lb. =2.2 cts./kg. $1.00/ton =$1.10/met. ton. 1 ct./gal = 0.264 ct./liter.

Table V *Price power costs relations for electrochemical products*

Product	Price per Unit*	Power, kw.-hr. per unit	Power Cost at 0.1 ct. per kw.-hr.	Per cent of Price	Power Cost at 0.2 ct. per kw.-hr.	Per cent of Price	Power Cost at 0.3 ct. per kw.-hr.	Per cent of Price	Power Cost at 0.5 ct. per kw.-hr.	Per cent of Price	Power Cost at 1 ct. per kw.-hr.	Per cent of Price
Sodium	19 cts./lb.	7.2	$0.007	4.	$0.014	7.6	$0.022	11.4	$0.036	20.	$0.072	38.
Aluminum	22 cts./lb.	12.	.012	5.5	.024	11.	.036	16.	.06	27.	.12	55.
Magnesium	30 cts./lb.	13.	.013	4.3	.026	8.6	.039	13.	.065	22.	.13	43.
Copper	$160/ton	220.	.22	0.14	.44	0.3	.66	0.41	1.10	0.7	2.20	1.38
Cadmium	64 cts./lb.	0.8	.0008	0.125	.0016	0.25	.0024	0.375	.004	0.625	.008	1.25
Zinc	$90/ton	3,000	3.00	3.3	6.00	6.6	9.00	10.	15.00	16.6	30.00	33.
Chlorine	2 cts./lb.	1.5	.0015	7.5	.003	15.	.0045	22.5	.0075	37.5	.015	75.
Carbide	$100/ton	3,000	3.00	3.	6.00	6.	9.00	9.	15.00	15.	30.00	30.
Silicon carbide	$100/ton	7,500	7.50	7.5	15.00	15.	22.50	22.5	37.50	37.5	75.00	75.
Graphite	7 cts./lb.	1.8	.0018	2.6	.0036	5.1	.0054	8.	.009	12.7	.018	25.7
Fused alumina	$90/ton	3,500	3.50	4.	7.00	7.8	10.50	11.7	17.50	20.	35.00	39.
H_3PO_4	9 cts./lb.	0.8	.0008	0.9	.0016	1.8	.0024	2.7	.004	4.4	.008	9.
Ferrosilicon	$35/ton	5,000	5.00	14.3	10.00	28.6	15.00	43.	25.00	71.4	50.00	143.
Ferrochromium	$200/ton	4,000	4.00	2.	8.00	4.	12.00	6.	20.00	10.	40.00	20.
Electric steel	$60/ton	500	.50	0.8	1.00	1.66	1.50	2.5	2.50	4.16	5.00	8.3
White lead	$150/ton	450	.45	0.3	.90	0.6	1.35	0.9	2.25	1.5	4.50	3.

* 1 ct./lb. = 2.2 cts/kg. $1.00/ton = $1.10/met. ton.

of product. Electric steel in terms of dollars is growing to equal the importance of soda ash, while at the present time electric steel is worth more than twice all of the nitric acid.

The electrochemical industries must have cheap power. This has been said so often that it has come to be regarded as axiomatic. In Table V the percentage of the total price of various materials at different power costs has been calculated. With power at a half cent a kw.-hr. one fifth of the value received for a pound of sodium is necessary to pay the power bill, while at one cent per kw.-hr., almost two-fifths of what is received for the sodium goes to the power plant. Even larger figures are noted at the same power costs in the case of aluminum and magnesium, and obviously these industries must have power cheaper than a half cent per kw.-hr. In the case of electrolytic zinc, a similar situation holds and we find the electrolytic zinc plants which are successful from the financial side are located at centers of cheap power. When a chlorine manufacturer has to pay a half cent and up for his power, he generally doesn't stay in the chlorine business very long. At present prices of two cents a pound, one and a half cents would go to the power company if power were purchased at one cent per kw.-hr. Were the ferrosilicon manufacturer forced to pay one cent a kw.-hr. for his power, he would pay the power company nearly one and a half times as much for the power to make ferrosilicon as he would get for the ferrosilicon. Even at three-tenths of a cent per kw.-hr., the power cost is a very large item in the case of most products. Small wonder the electrochemist is constantly looking for low cost kw.-hr. A survey of the country will show that many electrochemical centers have low power costs, as shown in Table VI.

From 93 to 94 per cent of the copper, 25 to 30 per cent of the zinc, more than 75 per cent of the cadmium, 83 per cent of the silver, probably 100 per cent of the bismuth output of the United States are the product of the electrolytic cell. In Canada about 30 per cent of the nickel and all of the cadmium are electrolytically produced. All of the chlorine in the United States, about 30 per cent of the caustic, and 7 per cent of the white lead pigment are produced electrolytically, all of these in competition with other methods. The power requirements for refining do not, because of the relatively low power needs per unit, bulk large. The total refining capacity for copper and zinc (the zinc being obtained by electrowinning methods) in the industrial countries of the world are given in Tables VII and VIII.

Table VI *Power Costs at Electrochemical Centers*

Locality	*Type of Plant*	*Power Cost Mills per kw.-hr.*
Alabama	Steam	3.8–6
Anniston, Ala	Steam	5
Arvida, P. Q	Hydro	1 –1.5
California	Steam	3.8–6
England	Steam	4 –5
French Alps	Hydro	2 –3
Germany	Steam (brown coal)	3.5–4
Great Falls, Mont	Hydro	3 –4
Kanawha Valley, W. Va.	Steam and hydro	4 –8
Massena, N. Y.	Hydro	3.8
Niagara Falls, N. Y.	Hydro	3 up
Norway	Hydro	1 –1.5
Ontario, Canada	Hydro	1.5–4
St. Louis	Steam	4 –5
Scotland	Hydro	3 –4
Shawinigan Falls, P. Q	Hydro	1 –1.5
Sweden	Hydro	1 –1.5
Switzerland	Hydro	3
Tennessee	Steam	3.8–6

Table VII

Refinery Capacity and Power Installation for Electrolytic Copper

Country	*Refinery Capacity (Tons)*	*Power Per ton (wk.)*	*Power per Year (1,000 kw.)*	*Daily Power (kw.)*	*Kw. Installed*
United States	1,781,000	220	391,820	1,088,400	45,350
Canada	195,000	220	42,900	119,200	4,970
South America	365,000	3,000	1,095,000	3,041,700	126,740
Japan	129,500	220	28,490	79,100	3,300
Germany	140,000	220	30,800	85,600	3,570
Belgium	121,000	220	26,620	73,900	3,080
Total	2,731,500	.....	1,615,630	4,487,900	187,010

1 ton = 0.907 met. ton. Power per ton (kw.) × 1.1 = Power per met. ton (kw.)

Table VIII

Refinery Capacity and Power Installation for Electrolytic Zinc

Country	*Refinery Capacity (Tons)*	*Power per ton (kw.)*	*Power per Year (1,000 kw.)*	*Daily Power (kw.)*	*Kw. Installed*
United States	231,400	3,000	694,200	1,928,300	80,350
Canada	163,400	3,000	490,200	1,361,700	56,740
France	50,400	3,000	151,200	420,000	17,500
Germany	1,200	3,000	3,600	10,000	420
Italy	24,000	3,000	72,000	200,000	8,330
Norway	40,000	3,000	120,000	333,300	13,900
Poland	30,000	3,000	90,000	250,000	10,420
Australia	79,000	3,000	237,000	658,300	27,430
Rhodesia	22,000	3,000	66,000	183,300	7,640
Total	641,400	.....	1,924,200	5,344,900	222,730

1 ton = 0.907 met. ton. Power per ton (kw.) × 1.1 = Power per ton (kw.)

World Supplies of Molybdenum

According to statistics issued recently by the United States Bureau of Mines, three concerns produce from 97 to 98 per cent of the world's requirements in molybdenum. Two of these, the Climax Molybdenum Company, Climax, Colorado, and the Molybdenum Corporation of America, Questa, New Mexico, are in the United States, and one, Norska Molybdenprodukter A/S., is at Knaben, north-east of Stavanger, Norway. It is stated that the Climax Company alone furnishes fully 75 per cent of the world's output, and has apparently developed ore reserves sufficient to supply the entire world's requirements, at the present rate of consumption, for 190 years. The production of the United States mines during 1931 amounted to 3,000 short tons on concentrates, containing an average of 85.93 per cent of molybdenum sulfide (MoS_2). Corresponding figures for 1930 were 3,618 tons and 85.75 per cent. The 1931 production, although considerably less than that of 1930, was slightly greater than the average for the five-year period 1926-1930.

What Industries Will Survive?

By John T. Madden

Dean, New York University, School of Commerce

LET us consider for a few moments the unbalanced price relationships that have existed. The prices received for the output of our farmers and other producers of raw materials have been out of line with the prices of manufactured goods. This differential was in part the result of the depression, and in part, a contributing cause of the intensity of the depression and the increase in unemployment. The purchasing power of the producers of raw materials was reduced, resulting in less demand for manufactured goods and the unemployment of factory workers reduced their purchasing power. This fact is within the domain of economics. We realize that this spread must be narrowed somehow if both parties are to benefit. It is obvious that the entire difference cannot be made up by a rise in the prices of raw materials nor can it be wholly made up by a reduction in the prices of manufactured goods. There must be movements in each direction and it follows the sooner that the spread is narrowed, the quicker complete recovery will take place.

In the usual order of things, these spreads are adjusted over a period of time by the normal operation of economic laws. No one group in society can exact for a long period of time more than its share of economic gains. Ultimately, and not without some inconvenience and suffering, the balance will be restored. Hypodermic injections which seek to alleviate one group must always be at the expense of another group and must inevitably result in failure, however alluring the prospect may appear.

Raw material prices are beginning to show a tendency to advance. If the advance is orderly and reasonable, the gap in the price relationships will be narrowed. The rise in the prices of raw materials is helpful but the gap cannot be entirely closed by this factor. It would be a serious mistake for prices of manufactured goods to be rushed up as this would only result in the return to former conditions. There is without doubt a serious shortage in stocks of goods and if all buyers start to indulge in a scramble for goods, sellers will be encouraged to demand higher prices. It must not be forgotten that the country is suffering from a serious lack of purchasing power. The real exchange is an exchange of goods or services. Sensible buying, maintenance of proper price relationships and increase in real purchasing power are the aims and ends to be sought.

We sense a definite improvement in the psychology of the people. Perhaps it is because as the Vicar of

Dr. Madden, who also occupies the position of President of the Alexander Hamilton Institute, read the above message to the New York Chapter of Cost Accountants. It is one of sound reasoning in which he warns that the new and larger demands on industry, brought about by the world wide depression, can best be taken care of by hard work.

Wakefield said, "I am at the bottom of the wheel; any revolution must take me up." The reports from Europe, both from agricultural as well as industrial nations show increased confidence in the outlook. The wave of hope started in Europe and spread to the United States where Europe believes the first significant evidences of prosperity must appear. Personally, I believe, there is very little of a tangible nature to support the present wave of optimism. The diamond market in Antwerp is brighter—always a good sign—and our own jewelers report a better tone to business. But I cannot put aside the fact that millions here and abroad are unemployed. Work, and only work, is the basis of all true prosperity.

The Day's Work

Let us analyze another proposal, the reduction of the working day. Some of us may recall the time when a twelve hour day prevailed for a large number of workers. We felt that a great advance had been made when the ten hour day replaced the longer working period. More recently the eight hour day has been adopted as the standard in many lines of activity. It is pointed out that modern mechanical devices should result in still further shortening the working day. On the other hand, some of us are old-fashioned enough to believe in the gospel of hard work and hence we believe that some of the measures proposed for the cure of unemployment must inevitably react detrimentally to the fibre of our national character. In the present emergency, spreading the available work to be done over a larger number of workers will not increase the total purchasing power. The proposal simply means that the wage fund will be divided among a larger number of workers and it is frankly a socialization of earnings. Now the fact is that in this country we have taken long steps toward the socialization of industrial losses and if we are to embark upon programs of socialization of losses and earnings, let us do so with full realization of economic consequences and consider carefully the necessary modification that must be made in our social and political philosophy.

Excessive idleness always has a tendency to produce less efficient workers and granting the assumption of a greatly reduced working day, management must determine the extent of this loss in efficiency if it is to be incurred and the accountant compute new costs. At once, there is introduced a new differential in the spread between the returns to the producers of raw materials and the returns to factory workers. The basis of our former national prosperity will be shifted. Heretofore, our national progress was largely the result of the pioneer spirit which involved work, hard work, and plenty of it but which at least produced a race that developed initiative and resourcefulness and trained men to overcome difficulties.

Or shall our problem be approached from another angle, with, of course, another answer. The problem then becomes one of providing full employment for all men and women instead of less employment for an increased number of workers. In other words, we abandon the old economic concept of free goods, limited to air, light and water except in large communities and substitute therefore, the minimum of food, clothing, and shelter for every man or woman willing to work. Even at the height of our prosperity in 1929 only a few had everything that they desired or could use. Millions were still dangerously close to a bare subsistence level. I shall not trespass further upon the domain of the speaker of the March meeting. I simply desire to point out that the newer and larger demands upon industry involve profound economic changes, the effect of which must be determined by management and the social cost of which must be reckoned by accountants.

Another topic which will engage your attention is that of stabilized earnings and savings. We have on the one hand the gospel of Henry Ford, which is to spend and the opposing plan which encourages thrift and savings. Somewhere midway between those extremes the truth rests. Mortgaging the future may be safely indulged in for things of permanent value which produce income. No one will argue against mortgaging the future for a home, or for an education that will enable the individual to share more largely in the rewards of society. But mortgaging the future for goods of a temporary nature or which minister to luxurious tastes is an entirely different matter. What constitutes a luxury is the next question. The story is told of a recent mass meeting of unemployed, the majority of whom came in their own automobiles. We have come to regard a motor car as a necessity and not a luxury. Freer spending cannot be safely indulged in unless the state or industry provides for the contingencies of old age and unemployment.

Optimistic Obstacles

Have we learned our lessons from this period of depression? I hope that we have but I doubt it. The stage is set for inflation and inflation is like a prairie fire which cannot be checked when once started but which must burn itself out. The recent stock market rise is justified in part as a corrective movement but it has gone too far in some cases. This does not mean that recession must necessarily take place although some retreat is to be expected. But with hoarded resources estimated at many millions, we have a potential spending power for the purchase of securities and commodities which if released will express itself in a boom.

The American is optimistic—he is an incurable optimist. Healthy optimism is a rare quality. The inevitable result is that governments, individuals and business organizations go heavily into debt, invest heavily in capital goods at rising prices and mortgage the future too readily. I have no faith in a planned production scheme—at least not until I receive some

assurance of the gargantuan capacity of those who are to do the planning. Perhaps such undiscovered giants lurk around the corner, waiting only to be discovered.

My own view is that regulatory arrangements by industries themselves will tend to prevent overproduction of individual commodities. This involves research into such questions as world demand and supply, accurate statistical data as to stocks on hand, sales and purchases. These plans may seem somewhat chimerical, born of the distress of the depression but the fact is they are engaging the attention of some of the world's most constructive thinkers. The passage from a period of scarcity economy to a surplus economy was made in the comparatively short space of fifty years. Economists gave little thought when the ravages of the world war had been largely overcome. No nation is absolutely self-sufficient and only a few are largely self-sufficient for a long period of time. Hence, world trade must be regulated on some basis if these effects of alternate periods of prosperity and depression are to be mitigated.

Can We Control Money?

The present depression has been characterized as no other previous similar period by the employment of unusual financial devices. It is very easy to criticize some of these but the critics forget that unusual conditions demand unusual remedies. We are warranted in employing every device that appears to offer some measure of relief or alleviation. Hence credit manipulation, moratoria and stabilization measures have been utilized both here and abroad and the improved psychology which we now sense, is in a large measure due to them. There is less danger in these devices if the bottom of the depression has been reached, and if one can more confidently hope that the worst is behind us. If the depression depth is to reach still lower levels, we may prepare for a complete economic collapse which would cripple if not permanently destroy the capitalistic system. The economies of the situation are clear and it behooves accountants and managers to take unusual precautions. It is for the ultimate advantage of stockholders to defer hope of dividends until debts are reduced, depreciation and amortization provided for, and a normal liquid position attained.

The present time offers an opportunity for pruning balance sheets by eliminating grossly over-valued intangibles, writing off inflated capital values and revising capital structures to meet existing conditions. Management may not wish to confess to past errors now indubitably revealed in idle plant, excessive capacity, obsolescence, or failure to adopt processes to new demands or the changes in the economic order. The concerns which have and which will recover most rapidly are those which now "clean house," reduce overhead and institute economies. I have no belief that the measures of enforced economy and thrift which we have been compelled to adopt under present conditions will carry over for some time in our consciousness. The depression of 1920-21 taught us the unwisdom of carrying excessive inventories and that lesson remained with most of us for a decade.

We must not expect a rapid recovery. While the world-power for recuperation is marvellous and on occasions greatly surprises as well as astonishes us, (for example, the recovery of France from 1926 to 1931) yet there is nothing in sight that argues for other than a slow rate of improvement. Personally, I expect a moderate improvement in the Fall. Whether the recovery continues will depend almost entirely upon a continuation of the efforts put forth in completing the needed readjustments of business. The temptation to relax must be energetically combatted and the alertness of accountants and managers must not die down.

There can be little in the way of recovery for private business when the public business is so poorly managed. No progress worth mentioning has been made in reducing Federal expenditures and the strain on the banking system brought about by government demands is beginning to cause some concern. State and municipal budgets are receiving more attention from the voters, but no great relief from our heavy tax burdens is in sight. We grumble when we compute our tax returns or when we pay the installments but we do nothing further about the matter. Our road construction programs alone involve an enormous amount of unprofitable disbursement of tax money. We may extract what comfort we can through the realization that similar conditions prevail in other countries. If manufacturers and traders would attach a label to each article made or sold showing what portion of the purchase price represented taxes, at least the taxpayers would be continually reminded of how much tax is paid indirectly in addition to those paid directly.

There has never been a time in our history when business managers, economists and accountants should proceed with greater caution, confidence and courage. Somehow I sense the feeling that we are on the eve of profound economic changes. But these great movements, while violent on occasions, are often largely accomplished before we realize it. Have we finally tempered our proneness to undue optimism? Have we suffered enough to emerge at last a really great nation? Have we realized that faith in mechanistic processes for social adjustment is built upon sandy foundations? Will we send to our legislative halls, real statesmen instead of peanut politicians? Have we learned that our institutions, governmental, industrial and social, are sound and useful only as they are managed by great men, unselfish men, with broad vision and sound minds? I do not know. But if the answer is in the affirmative, we shall be a happy and prosperous nation; otherwise let us prepare now for the next depression.

New Products and Processes

Weed-Killers

The value of ammonium sulfocyanide as a weed-killer in the growing of wheat and other cereals has been effected recently. The first trials were made with gas liquors containing about 20 per cent of the sulfocyanide, being carried out on good wheat soils. Trials were made with the liquor diluted to one-fifth, one-tenth, and one-hundredth of its original concentration. It was found that there was immediate destruction of all the species of harmful vegetation present, even at the lowest concentration employed. The treatment was effected prior to the sowing of the wheat, and it was found that so long as this sowing did not take place within two weeks after the application of the sulfocyanide the wheat did not suffer. On the contrary, the decomposition of the sulfocyanide in the soil produced nitrogen oxides which had a definite effect as fertilizer. It was also found that the sulfocyanide could be used in the form of spray for direct attack on the weeds.

A weed-killer for garden paths is recommended in the use of burnt pyrites. The pyrites are applied as a layer 5 c.m. deep on the areas to be kept clear of weeds, and one application is said to be effective for five years.

Creaseless Textiles

As a supplement to our announcement in the September issue under this heading, we add the following two practical formulae:

Cotton fabric is padded with a liquor consisting of 20 parts of 40 per cent. formaldehyde, 10 parts of urea, 5 parts of boric acid, and 60 parts of water, maintained at ordinary temperature and then dried at 130° C. for about half an hour. Under these conditions the urea and formaldehyde condense under the catalytic influence of the boric acid to form a resin within the cotton fibres. Afterwards, loosely adhering resin is removed by a boiling soap treatment. Alternatively, cotton fabric is mercerized in the usual manner and after washing out the alkali, but before drying, it is impregnated with a mixture of 100 parts of phenol, 100 parts of 40 per cent formaldehyde, and 4 parts of potassium carbonate, which is boiled for 5 minutes, then rapidly cooled. The fabric is then stentered on a hot air stentering machine such that it is dried at a low temperature, being afterwards heated for two minutes at 170° C. and finally soaped.

A cataylst is generally required in the formation of formaldehyde synthetic resins and this may be acidic or alkaline. In the case of cotton, tendering occurs when this fibre is heated with an acid so that it is preferable to use an alkaline catalyst as indicated in the second example described above. It is known, however, that formaldehyde resins are liable to become coloured when treated with alkalis, so that great care must be exercised in choosing the resin to be applied to white cotton materials. Presumably a colourless resin has been discovered for this purpose. Examination of fabric made uncreasable by the new process indicates that a formaldehyde resin is being utilized. Synthetic resins, too, are liable to harden during prolonged exposure to light or storage, and this point will require attention, since it would be fatal to the success of the new process if the uncreasable fabrics so produced gradually lost this property.

It is believed that uncreasable cotton and viscose rayon will find a very wide application in the production of dress materials. In rayon crepe fabrics the uncreasable treatment will not be so important, since these fabrics already largely resist creasing owing to the twist in the yarns from which they are made.

Metals and Alloys

Development of the Homo-Leadzin process has been announced as an improvement of the Homogeneous process for protecting metals and alloys against corrosion. This process is applicable not only where lead is serviceable but in hydrochloric acid of various concentrations, and steel shells, 14 to 16 feet in length, coated by this process with approximately 0.003-inch metal, have been in service for over a year. The Homo-Leadzin process is used where thin, impervious, economical coatings are desired, and for coverings of over 0.0625 inch the Homogeneous process is used. With both processes an inseparable bond is obtained that will withstand vibrations, mechanical shocks, vacuum, and changes of pressure and temperature close to the melting point of the coating metal itself. The process is applicable to steel barrels, drums, sheets, pumps, pipes, tubes, tanks, and other equipment.

Cellulose Esters and Ethers

In order to increase the insulation resistance of a cellulosic fibrous material such as yarn, woven fabric, papers, fibres, etc., for insulating conductors or other electrical apparatus, the material is treated with reagents which gradually convert the cellulose into esters or ethers, the time of treatment and optimum temperature being experimentally determined. For example, loose cotton cops are immersed in a bath of acetic anhydride, a dehydrating catalyst and glacial acetic acid, the cellulose being substantially converted into the monoacetic condition. The esterified product is freed from reagents by washing. A bath comprising by weight 20 per cent. acetic anhydride, 10 per cent. anhydrous zinc chloride, and 70 per cent. glacial acetic is preferably used and is stated to take twenty hours to convert the fibres, undiminished in mechanical strength, to monoacetate at 40° C.

Pulp Bleaching

A bleaching process has been patented which permits a higher degree of bleaching of pulp without accompanying damage to the fibers during the treatment. The plan is not only suitable for bleaching sulfite pulp, but it can also be employed advantageously in bleaching sulfate pulps and kraft fiber.

The process calls for use of enormous excess of bleach and in preventing the excess of acids from damaging the fibers. Previously it has been the common practice to use small excesses of bleach, 5 or 10 per cent., in other bleaching methods. This has been due largely to inability to determine with absolute accuracy the exact amount of bleach required in full bleaching to a given whiteness. The result was often damage to the fiber, particularly in cases where a high degree of whiteness was to be obtained.

Employment of an excess of hypochlorite, in amounts up to 100 per cent. or more over that actually to be consumed by the bleaching stock, without damaging the fiber or causing an enormous shrinkage, was heretofore considered practically impossible.

In the patented process this problem has been solved by adjusting the conditions of the full bleaching stage in such a manner that a large volume of the bleach solution is not materially altered during the chemical action on the pulp fiber suspended in it.

The bleached pulp obtained after removal of the excess bleach has been given an acid wash. During this treatment the decomposed products formed during the bleaching but left on the fibers, are now readily dissolved, causing the acidified water to turn a deep yellow, and it is at this point where the full whiteness attained is revealed.

Chemical Facts and Figures

Japanese Chemical Invasion?

To the military occupation of Manchuria Japan has added a chemical invasion of several important markets, and the same economic pressure is pleaded in both operations.

Japanese chemical expansion has been rapid. The Japanese consumption of chemicals has been charply curtailed. The yen, normally worth 50 cents, is today depreciated a little more than half.

During September, 10,000 bags (560 tons) of Japanese potassium sulfate for fertilizer purposes arrived at Jacksonville, Fla. Late in August, on the Pacific Coast, 2,714 tons of superphosphate and 67 tons of miscellaneous fertilizer material were received. In N. Y. City, late in September, Japanese producers offered bicarbonate, caustic and acetic acid at low prices. From the Pacific Coast came similar reports, with confirmation of actual bicarbonate sales.

Japanese alkali production has grown rapidly in the past three years and projected plans, not yet wholly abandoned, call for almost a doubling of present ash and caustic outputs in 1933. Japan has bid boldly for complete independence in chemicals and recent developments indicate an intention of capturing the chemical markets in the Orient. For years these markets have been dominated by the British. Japanese production of ash increased from 25,500 tons in 1927 to 62,700 tons in 1929 and close to 120,000 tons in the past year, with Nippon Soda accounting for 50,000 tons and Asshi for 70,000. Japanese ash consumption is nominally 100,000-125,000 tons and is now off probably a half. Indicative of the decline of British domination in the Japanese market is the loss of 15,380 tons in imports between 1929 and 1930, the actual figures being 87,880 and 72,500 tons. Imports for 1931 and 1932 are reported to have declined further from the 1930 figure.

As a large rayon producer Japan is vitally interested in caustic production. In 1930 domestic manufacture was reported to be close to 35,000 tons. Nippon Soda has but recently doubled its caustic capacity of 12,000 tons and it is believed that the total productive capacity is now around 60,000 tons. Consumption is estimated at a normal 80,000 tons, but today it is actually below current production.

Due to the Shanghai fizzle, Japanese exporters particularly of textiles have lost Chinese trade, with the result, that Japanese consumption of chemicals has seriously declined. It is therefore likely that Japanese alkali producers now have a large surplus. This may also be true of bicarbonate, but the estimated consumption of 7,000-8,000 tons a year, against a production of only 3,500 tons, makes this assumption difficult to believe.

Acetic Acid Surplus

Japanese producers of actic acid (produced in large quantities for rayon) also have a surplus. Production figures for the past two or three years are not available, but 20,000,000 pounds were produced in 1928, with synthetic accounting for 4,000,000 pounds. It is this synthetic output which has been markedly expanded. The Chinese markets for bleach and fertilizers have been sharply reduced by the boycott.

Nobeoka ammonium sulfate factory of Japan Nitrogen Fertilizer Co., with a 50,000 ton capacity a year

The Japanese Government has been abetting these chemical developments. Last July the tariff on alkalies was raised to 35 per cent, whereupon Brunner, Mond (sales agents in the Orient for the I. C. I.) cut the caustic price to yen 5.50. It is understood a truce has been declared, but the Japanese have, in the meantime, captured the Java market to which we ship about 4,000 tons of caustic and 1,500 tons of ash and has been delivering to Buenos Aires. Since 1929 the alkali industry has been favored by a subsidy on salt, which is a Japanese Government monopoly, to the extent of 22 sen ($5.28 at present exchange) per 100 kin (13,300 pounds). This is paid in cash and amounted in 1930 to over a half million yen. Furthermore, due to government shipping subsidies and the depreciated yen, the Japanese chemical producers enjoy very low freight rates and it is said they can deliver at Shanghai, a two days run, for 75 cents a ton; to the Pacific Coast for $1.35; and to our Eastern ports for $1.75.

Ammonium Sulfate Threat

The fertilizer industry particularly is aroused by the threat of a Japanese invasion of fertilizer materials. Small shipments of mixed fertilizers are reaching the Pacific Coast with frequent regularity. In addition, small shipments of ammonium sulfate (synthetic) have been reported. The Japanese Government has the Japanese rights to the Haber process as reparations and has turned it over to the Toyo Nitrogen Co., Toyo Nitrogen has collected yen 1,800,000 on imports but has never made a ton. The government in the spring decided to abandon this system and on Sept. 9 the company agreed, asking formal permission to stop making collections. Japan's present ammonium sulfate manufacturing capacity is 800,000 tons a year. Six companies—Chosen Nitrogen, Miike Nitrogen, Sumitomo Fertilizer, Ube Chemical Industry, Daido Fertilizer and the South Manchuria Railway Co.—are planning to add 520,000 tons to this by 1935, making the country self-sufficient. Importers on the Pacific Coast are suggesting to their Japanese principals to mix sulfate and superphosphate in order to escape any "dumping" charges here.

German Nitrogen

Synthetic sodium nitrate production in Germany may exceed 200,000 tons this year, almost 150,000 tons having been exported, mainly to France, in the first six months of 1932. This is a record and can be compared with an output of 180,000 tons or less in 1931, and an average of 60,000 to 70,000 tons in immediately preceding years.

Potassium nitrate, third nitrogen export item from Germany now, after ammonium sulfate, will attain a 1932 production of about 50,000 tons. This is the chief nitrate import by the U. S. from Germany this year, approximately 4,000 tons having been shipped to U. S. out of total German potassium nitrate exports of around 18,000 tons in the first six months of 1932. The Wintershall (potash) company dominates potassium nitrate production, operating a special process at its works at Sondershausen.

Exposition Postponed

The Chemical Exposition has been postponed from Feb. 27-March 4 date to the week of Dec. 4-9, 1933. Expressions of opinion among exhibitors as to the advisability of postponing the Exposition, showed an overwhelming majority in favor of a later date. (CHEMICAL MARKETS, September, p. 241), and at a conference between Charles F. Roth and Fred W. Payne, managers of the Exposition and representatives of the exhibitors, the details were amicably arranged to mutual satisfaction.

Under date of Sept. 22 the Exposition Management advised in a letter sent to all exhibitors of the change, stating: "Thoughtful consideration of the scheduled dates for this Exposition by quite a number of exhibitors and our Company has resulted in a decision to postpone it to Dec. 4-9, 1933. The selection of these dates will bring the Exposition at a time co-incident with the annual meetings of the American Society of Mechanical Engineers and the American Society of Refrigerating Engineers, the members of which we feel sure will welcome the opportunity to attend the Exposition. They will furnish an additional audience of buyers.

"The new dates will allow exhibitors more time to plan and prepare their exhibits, possibly more latitude in their plans through coming at a time when more generous outlay both of time and money on exhibits may seem more justified. These new dates seem bound to ensure a greater number and more enthusiastic exhibitors, a larger audience and more trading on a larger scale."

Exhibitors Promise Cooperation

On the same day the exhibitors group broadcast a letter calling attention to the change in date. This letter read in part as follows: "We believe that all exhibitors will sincerely appreciate this cooperation on the part of the International Exposition Company, involving as it does, financial loss and much inconvenience. The New York group has promised full support to the Management in helping to put over the Exposition and we feel that with the cooperation of all exhibitors, it should surpass the high standards set by the Exposition in previous years." Members of the New York group individually praised the action of the Exposition Management, and stated that they intended to lend every effort possible to making the Show a decided success and felt that the postponement would definitely insure the cooperation of all exhibitors.

In its letter, the New York group asked each exhibitor to state whether or not it was desirable to appoint a temporary committee to represent the exhibitors and to cooperate with the Management until the week of the Exposition when a regular committee could be elected. Those suggested for the committee are, A. E. Marshall, Corning Glass; Howard Farkas, U. S. Stoneware, Guy N. Harcourt, Buffalo Foundry & Machine; K. E. Moore, Johns Manville; H. C. Russ, Abbe Engineering and F. H. Jones of Dorr.

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400 Solvent Installations

"English and Germans have both developed a detached and philosophical state of mind towards adversity caused by nearly eighteen years of struggle to adjust themselves to war-bred conditions. Americans, with but two or two and one-half years of poor business, are unaccustomed to such a status and mentally are more upset and disturbed"—is the way Jos. Wrench, sales manager, Industrial Chemical Sales, summarizes the most striking difference in the general feeling towards depression on both sides of the Atlantic. "It is remarkable," he added, "the determination of the British as a Nation to improve their financial condition and the ease with which several of the internal loans are being refinanced at lower interest rates." Mr. Wrench was greatly impressed with the advances being made in solvent recovery practice in England and Germany. He believes, over 400 installations have been made in the past two years. One or two weeks of his trip was devoted to an inspection of important new clay fields in Bavaria.

COMING EVENTS

American Oil Chemists' Society, Chicago, Congress Hotel, Oct. 20-21.

Association of Official Agricultural Chemists, Washington Hotel, Raleigh, Oct. 31-Nov. 2.

Federation of Paint and Varnish Production Clubs, Washington, Mayflower Hotel, Nov. 11-12.

American Bottlers of Carbonated Beverages, Cleveland, Nov. 14-18.

American Paint and Varnish Manufacturing Association and National Paint, Oil and Varnish Association joint convention, Washington, Hotel Mayflower, Nov. 14-19.

American Institute of Chemical Engineers, Washington, Dec. 7-9.

American Chemical Society, Spring Meeting, Washington, March 11-16, 1933.

American Society for Testing Materials, Chicago, Hotel Stevens, June 26-30, 1933.

Exposition of Chemical Industries, Grand Central Palace, N. Y. City, Dec. 4-9, 1933.

American Society of Mechanical Engineers, N. Y. City, Dec. 4-9, 1933.

Local-N. Y. City

Oct. 14—Joint meeting American Chemical Society, Society of Chemical Industry, The Electrochemical Society, Societe de Chimie Industrielle.

Oct. 21—Regular meeting Societe de Chimie.

Nov. 4—Joint meeting. Grasselli Medal presentation.

Washington

Government in Business

"Get the government out of competition with private business" is the new themesong of the National Association of Manufacturers. At recent meeting, statement of five principles was adopted and members and non-members of the Association are being urged to write congressmen and senators requesting statements as to position on the question of government competition with private enterprise. The principles adopted are:

1. The Government ought not to engage either directly or through subsidies in the manufacture, production or purchase of commodities or services for sale or re-sale in competition with private interests.

2. It ought to procure commodities and services for all its uses from the commercial and industrial world.

3. The Navy yards are established to maintain the armed fleets of the United States and are justified only while fulfilling that function. The federal arsenals are equipped to produce war materials not generally produced commercially. They should not be employed to produce commercial or military articles manufactured by or obtainable in quantity from private industry.

4. Government departments, while continuing to engage in any act of production or service, should be required to establish and maintain a standard system of accounting containing those elements ordinarily recognized in all similar conditions of private operation.

5. Other things equal, the Government should give preference in purchasing of commodities and services to domestic producers.

Chemical industry is represented in the National Association of Manufacturers by President Harry L. Derby, American Cyanamid & Chemical, for several years chairman of the Tariff Committee of the Association and for the past two years a director.

Hearing Sept. 20

On Sept. 20 a group of industry executives, including representatives of the oil, paint and varnish, the lead and fertilizer industries, appeared before the special committee of the House appointed last December to investigate the question of government competition with private industry led by Chairman Joseph B. Shannon (Mo.)

Judge James G. Emery, general counsel of the National Association of Manufacturers, handled the presentation of the witnesses. The personnel of the committee in addition to Representative Shannon is as follows: Judge E. E. Cox (Ga.) a strong advocate of either govern-

ment or subsidized operation of Muscle Shoals, Samuel B. Pettingill (Ind.) William H. Stafford (Wis.) and Robert F. Rich (Pa.). Charles J. Brand, secretary of the N. F. A., appeared for the fertilizer industry.

Southern Pine Developments

The discovery of a possible method of eliminating blue stain from pine paper pulp is reported by Dr. Charles H. Herty, head of the paper pulp experiment station, Savannah.

The Savannah plant, he reports, has shown the way to get ahead of the sap stain, but experiments with grinding machinery are still to be worked out which will show a longer fiber and whiter pulp. Under the new process the expensive seasoning of logs would be eliminated and permit delivery of logs to pulp mills at lower cost to the timber owner.

New Canadian Trade Mark Law carefully reviewed from chemical point of view by MacRae-*Canadian Chemistry and Metallurgy*, Sept. 32, p. 236.

Calcium Phosphate in Foods

"Calcium Phosphate Bulletin" a new publication of Provident Chemical Works, St. Louis, division of the Swann Corp., is published to advance scientific and technical knowledge of the uses of calcium phosphates in foods. The first issue deals largely with scientific nutritional aspects in the diet and reviews the evidence that calcium phosphate in the inorganic form is suitable for reinforcing diets deficient in these essential bone-and-teeth building elements. Various uses in baking powder, flour, bread, salt and other food products are discussed, and a partial list of important literature on calcium and phosphorus in nutrition is included.

International Dry Ice Group

Internationale Trockeneis Vereinigung E. V.—International Dry Ice Association, is formed as a result of a conference held in Cologne last March. Purpose— to consolidate technical and commercial interests of firms, to exchange information, organize propaganda and co-operative advertising. An official technical journal is contemplated.

Soviet Institute of Applied Chemistry is reported to have perfected new synthetic process for cyanide manufacture. A commercial plant is now planned.

Phosphoric acid—good review of the economics of the three thermal processes employed by Swann, Victor, and the new Coronet Phosphate plant, by W. H. Waggaman, with estimates of production and consumption, tables of fuel and freight costs, and conclusions rather prejudiced in favor of the two step fuel furnace process—I. & E. Chem., Sept., 1932, p. 983.

*Blanche gave way Oct. 5 to Javier Figueroa.

Foreign

Socialist Provisional President Davila of Chile capitulated Sept. 13 to General Blanche, who in turn, was succeeded 24 hours later by Aviation Colonel Arturo Merino. Blanche brought Merino and his airplanes to the presidential palace to back up a demand for Davila's resignation. Merino taking a sudden dislike to Blanche, and approving of the Palace as a residence, ordered his rival to exile on Juan Fernandez Islands. Blanche, taking a leaf out of Davila's notebook on proper presidential behavior, succeeded in a coup against Merino and at the moment* (Sept. 29) Blanche is again holding the center of the Chilean political stage. In the resulting confusion Davila escaped. In the meantime W. B. G. Whelpley, Cosach president, is sitting helplessly by at Valpariso waiting an opportunity to sell the Chilean Government his reorganization plan. Time is likely to be the essence of success as the London group of interests in Cosach is sending Sir Sydney Henn to Chile with, so it is understood, a rival scheme. According to the *Evening Standard* (London) the Guggenheim wing's plan gives American financial interests more generous treatment and also places the Chilean treasury in a very unfavorable position.

During the first four months of 1932 exports of nitrate of soda from Chile amounted to 193,500 tons, compared with 592,000 tons in the corresponding period of 1931, or a decline of more than 67 per cent.

Results at Ottawa

Uncertainty continues in chemical circles concerning the provisions of the Ottawa Conference. To what extent the agreement signed between Great Britain and Canada will effect our future trade will not be disclosed until the pact comes up for ratification in October.

$3,000,000 Loss?

Great Britain, it is believed, requested an increase in imports into Canada equivalent to approximately 10 per cent of our normal exports to the Dominion. If this object was attained, it means a loss of from two to three million dollars to this country.

In certain circles the effect of the agreement is being minimized based on the theory that Canada is not likely to aid Great Britain in underselling American manufacturers on products which Canada is now endeavoring to build up a home industry in. It is further pointed out that Canadian Industries, Inc., which would be the largest benefactor of any increase in Canadian production, is jointly owned by the I. C. I. and du Pont. In addition, American finished products, such as paints, lacquers, and pharmaceuticals are firmly entrenched in the Canadian market and will prove difficult to dislodge.

German Import Duties

In Germany new import duties were placed in effect Sept. 6 to "further moderate regulation of imports," according to a statement of the German Chancellor. Certain chemicals are effected by the new decree, but as yet, the specific changes have not been disclosed. The German government is also said to be contemplating establishment of import quotas on several products.

Four large groups of paint and varnish manufacturers are to become merged in a new company, to be known as the Chemie-Farben G.m.b.H., of Berlin-Brits. The groups concerned are O. P. G. Wedekind & Co., the Altropac-Farben G.m.b.H., the Chemieprodukte G.m.b.H., and the Nitrocellulose Varnish Sales Office of the I. G. Others are the Gustav-Buscher, Gebruder Pfanne, and J. C. Schultze firms. The combine hopes to stimulate home sales by extending commercial and technical service available to consumers.

Nitrogen Conference

The Berlin conference of synthetic nitrogen producers and representatives of the Chilean "Cosach" held during the last week of September failed to produce a definite settlement. The political tangle in Chile is held responsible for the failure. The agreement between European manufacturers, however, remains in force.

Ontario, Canada, is issuing new regulations governing use of benzol, lead and other industrial chemicals. Copies of regulations may be obtained from Ontario Dept. of Public Works and Labor.

Efforts to form a world asbestos cartel have collapsed and the domestic market for that product is now free and open, the Tariff Commission was told Oct. 1 by Herbert Abraham, president, Ruberoid Co., operator of plants manufacturing asbestos products in various parts of the country.

Chile exempts import duty on lead arsenate and oil for fruit tree spraying, when consigned to the Caja de Credito Cegrario (Agrarian Credit Bank). Usual arsenate duty is 0.50 peso per gross kilo, and on disinfecting oil, one peso.

English chemical industry is greatly encouraged by the increase of the interim dividend of I. C. I. from 1½ per cent to 2½ per cent. In Great Britain the first eight months of 1932 have been better than the rate prevailing in the last quarter of 1931.

Obituaries

Alfred W. Jenkins

Alfred W. Jenkins, 70, senior partner, Parsons & Petit, died Sept. 28 at Vichy, France. In 1877 he entered the employ of Parsons & Petit, in 1898 became junior partner in the firm, and 19 years later, senior partner. He was also connected for many years with Freeport Texas. Mr. Jenkins was decorated by the French Government in recognition of his interest in French art. He was widely known in the Metropolitan area for his charity work.

One week before his death he dictated his own obituary notice to his secretary.

"Born at Mystic, Connecticut, July 17, 1862 and moved to Brooklyn when very young, residing there a life time Educated in the public schools, taking a supplementary course in arithmetic and grammar, French and music. Joined Parsons & Petit at an early age, rose from office boy to senior partner and finally became sole proprietor. Deeply interested in art, music and literature. Was one of the trustees of the Brooklyn Institute of Arts and Sciences and one of the governing committee of the Brooklyn Museum and the Brooklyn Botanic Garden. Very fond of floriculture. One of the older members of the Montauk Club, member of the Metropolitan Museum of Art, French Institute, American Museum of Natural History, Museum of the City of New York, Art center and various other public institutions. Member of the National Opera Club of America and member of various turf organizations, having enjoyed racing on holidays for many years. Travelled extensively in Europe and was familiar with most of their countries, particularly France where he lived for the last three years of his life. He was a great admirer of France and did everything he could to promote the cordial relationship between the two countries."

I. Hechenblieckner, 47, Chemical Construction vice-president, died at Butler, Pa., Sept. 17, following appendicitis operation. He founded Chemical Construction in 1915.

William A. Archer, 56, Louisville manager for Liquid Carbonic, died Aug. 31. He was connected with the one company for 30 years.

Francis W. Belknap, 58, brother of Charles Belknap, president of Merrimac, died suddenly Sept. 22 in the Pennsylvania Station N. Y. City. He was president of Phoenix Engineering and a well-known construction engineer.

George Holmes Maxwell, 68, president, North American Chemical, Boston manufacturer of leather chemical specialties, died Sept. 16 at Pasadena, Calif.

E. H. Dunlap, 58, Dunlap Chemical president, Memphis, Tenn., died Sept. 20.

Association News

Chemists' Club Scores

Chemists' Club (N. Y.) members' golf scores reported Sept. 21 from Pelham Country Club indicate sharp form reversal. Chief Chemist Frederick Kenney, N. Y. City Dept. of Purchases, walked off with the President's cup, awarded for low net, largely because of a 64 registered earlier in the season at Rye. President Elon H. Hooker, Hooker Electrochemical, favored to win, finished six strokes behind Kenney. Glenn L. Haskell, U. S. I. vice-president, captured low gross with an 83, followed by A. B. Baker, Bradley & Baker, with an 85 and J. P. Hubbell, Singmaster & Breyer with a 90. Frank G. Breyer of the same firm took low net, H. B. Prior, H. B. Prior Co., the Kicker's Handicap and Texas Gulf Sulphur sales manager, H. R. Wemple, the Guest Prize. "Wemp" turned in the best exhibition of the day with a 80-5-75. President George C. Lewis and donor of the President's Cup, acted as toastmaster. Principal speaker, Mathieson's traffic manager, Harry Mabey —subject one that could either be construed as being about traffic or not. Present in addition to those mentioned— "Doc" Dorland, representing both Dow Chemical and both ends of the Dorland-Chew feud, Columbia's D. D. Jackson, A. E. Marshall, W. B. Thom, Hal Fyffe, H. O. Chute and Leon V. Quigley. Master of Ceremonies "Bob" Quinn, Mathieson, presented the prizes.

Salesmen Golf

Maplewood Country Club and Haggerty Bros.' "Charlie" Kelly played host to the Chemical Salesmen's Association Sept. 13. "Eddie" Orem of du Pont entering into bitter fratricidal strife with "Al" Alvarez of Grasselli nosed out both "Al" and "Al's" usually closest competitor "Bob" Brewer, Liberty By-Products, by scoring a 91 in the low gross as against a 92 for both Alvarez and Brewer. W. H. Adkin, Givaudan-Delawanna's purchasing agent, won low net, low gross for guests went to George Uhe and the day's Kicker's Handicap to R. H. Langmeier, Hercules Powder. The winners in the Grand Kicker's Tournament, covering the four 1932 meetings of the organization, were: first, William Barry, Mallinckrodt; second, Grant Dorland, MacNair-Dorland; third, J. A. Leppart, Columbia Alkali; fourth, B. J. ("Gogo") Gogarty, of Rossville.

Personal

Sir Harry McGowan, I. C. I. chairman, sailed Sept. 10 for Canada and the U. S.

Warren F. Bleeker, Boulder, Col., chemical engineer, is Republican candidate for governor.

J. Davidson Pratt, general manager and secretary, Association of British Chemical Manufacturers and recently present at Ottawa as British chemical industry's watch-dog, will, together with W. J. Woolcock, represent chemical section in next Industries' Fair.

Charles M. Schwab, Bethlehem Steel chairman, is to receive Melchett Medal for 1932 by vote of the Council of the Institute of Fuel (England). Mr. Schwab is now in Europe and the medal will be presented at a dinner Oct. 19.

H. C. Wilson, Plymouth Motor Corp., and a sound-picture, "Behind the Scenes," entertained Chicago Drug and Chemical Association members at first fall meeting Sept. 20.

John R. Baylis, physical chemist of the City of Chicago, receives John Goodell Medal of the American Water Works Association, for research on activated carbon in water.

Teynham Woodward, Los Altos, Cal., is now in consulting work, specializing in salt and allied fields.

Frederick G. Keyes, M. I. T. professor of physical chemistry, and lieutenant-colonel, reserve corps, Chemical Warfare Service, is presented with military decoration of the Purple Heart, Sept. 10 at a dinner at the Harvard Faculty Club, Cambridge.

F. W. Pickard, du Pont vice-president in charge of foreign relations, sailed Oct. 1 on the "Ile de France."

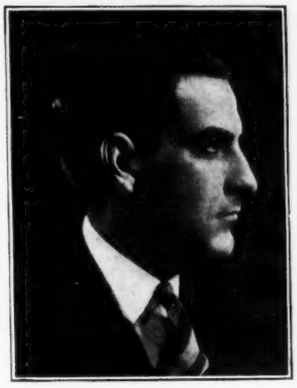
Rudolph Neuberger, merchandise executive, Vapon Co. division, Atlas Powder, speaks before Chicago Association of Commerce on "Distribution in the Post-depression Era."

J. Stogdell Stokes, Stokes & Smith Manufacturing Co., elected a director of Penn. Salt.

"Chemical Research Trends" a resume of recent fundamental investigations affecting the pulp and paper industry by Louis E. Wise, professor emeritus, N. Y. State College of Forestry, in *The Paper Industry* for September, briefly summarizes some of the recent achievements of the paper chemists.

Company News

Edgar M. Queeny, Monsanto's president, reports sales of American company for the first 23 working days of September at 22 per cent more than in the like



Edgar M. Queeny
Sees business improvement

period of August and only eight per cent under sales for September, 1931. Sales for July and August were, respectively, 24 and 26 per cent behind the like months of last year.

"Some improvement," he said "is apparent in practically all divisions, but sales to the textile and rayon industries have shown a very marked pick-up in recent weeks."

Zecol, Inc., incorporated at South Milwaukee to manufacture and distribute chemicals.

American Instrument, Washington, D. C., is marketing apparatus for hydrogenation on a laboratory or semi-works scale.

Dr. H. D. Pease, Pease Laboratories, N. Y. City, is now directing consulting services in the antiseptic and disinfectant fields formerly performed by L. C. Himebaugh.

Linde Air Products introduces cylinder truck for distribution by Prest-O-Weld and Purox jobbers. Truck greatly increases ease of moving welding equipment.

F. J. Stokes Machine, Philadelphia, adds new one gallon automatic laboratory still to line.

U. S. Colloid Mill, Long Island City, marketing new type mill for fibrous materials.

De Vilbiss Co., Toledo, Ohio, is marketing "Pro-Tek" a product recommended for workmen's hands while engaged in handling lacquer, paint, varnish, grease, oil and similar substances.

Hercules Powder is offering employees two cooperative group insurance plans, one providing group life insurance, and the other, group accident and sickness insurance. Each employee with one year or more of continuous service and at work, is eligible to benefits provided. Those with shorter service, and new employees taken on later, become eligible upon completion of the required service. Eligible employees can become insured without medical examination. New group plans will become effective as soon as 75 per cent of the company's employees file applications for insurance. Travelers Insurance, Hartford, is underwriting the plans.

Du Pont will assemble all Charlotte, N. C., units at 228 W. First st. Du Pont Rayon, Grasselli, R. & H., du Pont Cellophane, and du Pont paint and varnish division will move into new quarters Nov. 1.

Lockwood Chemical organized at Buffalo, N. Y., by Fred and E. Lockwood to manufacture and distribute chemicals.

Arthur Wright and George W. O'Keeffe form Arthur Wright & Associates, equipment and process engineers, with main offices at 155 E. 44th st., N. Y. City, and branch at 1580 Macadam Road, Portland, Ore. Firm will serve as general sales engineers for Filtration Engineers, Inc., Newark, N. J.

Tarzan Chemical, Wilmington, N. C. will manufacture glue, rubber and paint products.

Pfaudler Co., Rochester, N. Y. manufacturer of glass-lined steel equipment, is celebrating 50th anniversary.

Dow's recent booklets win favorable comment in Sept. 8 issue of *Printers' Ink*.

Rumor links names of Corn Products and Penick & Ford in merger. Corn Products' appeal of patent infringement (Widmer Patent) case won by P. & F., it is said, may lead to some kind of settlement.

"Doracid" a nitrated cotton for the filtration of acid solutions is being marketed by Dorr.

Royal Soap & Chemical, Los Angeles, is moving to larger quarters at 5101 S. Central ave.

Dry Ice, N. Y. City, purchases Cold Carbonic, securing C. L. Jones as chief engineer.

Stanco, N. Y. City, successfully contends that "Zit" a trade-mark requested by Bonide Chemical, Utica, N. Y., is likely to be confused with "Flit."

Du Pont's August business showed marked improvement over earlier months and this improvement was carried over into early September, according to Lammot du Pont, president.

Henry W. Peabody & Co., well-known N. Y. City importing firm, is making ready to liquidate Oct. 31, according to reports current in the trade. The shellac division, in charge of David Mulford, and the mercury division, in charge of Charles Wehrley*, may be continued under other arrangements, but the details have not as yet been disclosed.

P. & G. increases wholesale price on two of its principal price brand laundry soap lines, one by 12 2-3 per cent and the other by 20 per cent. These increases mark the first raise by a leader in the industry since prices began dropping two years or more ago, and probably are the forerunner of similar increases by the industry as a whole.

Great Western Electro-Chemical, after three years of experimentation with the bleaching effect of various chemical reducing agents on groundwood, is offering a process which is said to be a distinct improvement over previous methods. Process is already established as standard practice in several Pacific Coast and Canadian mills. U. S. Patent 1,873,924 and Canadian Patent 307,440 have been granted to Great Western Electro-Chemical for the Hydrosulphite Process. For newsprint, book papers, fruit wrap and kraft it is claimed that the Hydrosulphite Process is producing a whiter sheet even from Western Hemlock, or dark and discolored woods, than has heretofore been possible with any other bleaching agent.

Duriron appoints W. H. Scott general sales manager succeeding T. D. Slingman, Jr., resigned. Mr. Scott has been with Duriron for 13 years, having had charge of the Atlanta division and later Philadelphia territory. In 1929 he became sales manager, Industrial Department and head of the Technical Department. He is chairman of a sub-committee of the A. S. T. M. on "Sulfuric Acid Submerged Corrosion."

Plymouth Products, Syracuse, N. Y. soap flakes company, elects George L. Brown, president. He is also vice-president, J. T. Robertson Co., soap manufacturer.

Joseph Turner, Joseph Turner & Co., N. Y. City, is offering sodium chlorate for export.

*Charles Wehrley resigned October 1st.

Heavy Chemicals

Nitrite Tariff Snarl

Norwegian Nitrogen Products is appealing for a review by the U. S. Supreme Court from a decision handed down by U. S. Court of Customs Appeals. The question involved is whether the petitioner is entitled to inspect all of the data submitted to the Tariff Commission. American Nitrogen Products submitted to the Tariff Commission several years ago a plea for a report and recommendation to the President that the sodium nitrite duty be increased 50 per cent. The American company agreed to disclose production costs providing the Norwegian company would do likewise. This was refused. The Norwegian producer insists, however, that it should be permitted to examine all of the testimony and facts taken before the Commission upon which was based the decision of President Coolidge in 1924 increasing the rate on sodium nitrite.

The Dept. of Justice offers no opposition to the appeal but has filed a brief stating that the matter is one of broad importance and pointing out that "the Tariff Commission has interpreted its own rules at the outset of this investigation. It had shown that cost of production was "a trade secret within the meaning of that term as used by the Commission." The question is of extreme importance to manufacturers in this country. In many instances in the past manufacturers have presented to the Commission confidential information on production costs only on the understanding that such information would not be disclosed.

British Exports

British foreign shipments of major heavy chemical products in the first half of this year were larger than those in the corresponding period in 1931.

	Long tons	
	1932	*1931*
Bleaching powder	11,590	8,695
Blue vitriol	35,592	30,096
Caustic soda	49,470	41,236
Potash chromates	463	372
Saltpeter	474	317
Soda carbonates	103,970	95,695
Soda compounds, other	32,381	13,415
Sulfuric acid	1,826	1,126

Barium Products in 1931

Manufacturers of lithopone in 1931 consumed about 59 per cent of the quantity of crude barite used in the manufacture of barium products and chemicals. There were decreases in sales of lithopone in 1931 of 7.5 per cent in quantity and 18.2 per cent in value, as compared with 1930. The average value per ton of $85.61 in 1931 was approximately $11 lower than the corresponding figure for 1930. Barium sulfate, blanc fixe, or precipitated barium sulfate, was made in seven plants in 1931 (two more than in 1930). The total quantity manufactured and sold exceeded by far the quantity of any other barium chemical manufactured and sold during 1931, and the output showed increases in both quantity and value, as compared with 1930.

Barium Products Sold or Used by Producers in 1930 and 1931

Products	*1930 Short Tons*	*1931 Short Tons*
Ground barite	55,284	32,297
Lithopone	164,065	151,850
Carbonate	5,224	4,499
Sulfate	(1)	31,151
Undistributed[2]	26,139	7,241
	250,712	227,138

[1] Bureau of Mines not at liberty to publish figures.

[2] 1930: Barium oxide crystals, binoxide, chloride, hydroxide, monoxide, sulfate, and sulfide; 1931: barium binoxide, chloride, oxide, and sulfide.

Russian Bichromate

Russian output of sodium bichromate rose from 3,000 tons to 3,500 tons, and to 4,000 tons in the three fiscal years 1927-28, 1928 29, and 1929-30 respectively. Potassium bichromate made was 619 tons in 1927-28, and 784 tons in 1928-29. Intention of the Soviet authorities is to increase, by the end of the second Five-Years Plan period, the total Russian output of bichromates to 18,000-20,000 tons a year. Bichromates are among the few chemical products in which Russia is virtually self-supporting, exports having been maintained uninterruptedly since the fiscal year 1927-28, the amount shipped in 1929-30 being 975 tons. Material is being marketed in a number of countries, Germany, for instance, importing 713 tons of Russian sodium chromate and bichromate in 1931, out of an import total for that year of 757 tons. A new plant for the conversion of by-product sodium sulfate to sulfide and also thiosulfate is being erected.

CO_2 Refrigeration

Carbon dioxide in refrigerator cars is found by Government chemists to effectively prevent spoilage of fruits and vegetables, although the usefulness of the method is limited beyond a certain point. The flavor of some fruits was unfavorably affected by the treatment, the tests reveal.

Heavy concentrations of CO_2 gas were withstood favorably by grapes, peas, sweet corn, but the flavor underwent impairment in the case of peaches, apricots, strawberries and red raspberries. What the Dept. of Agriculture described as "intermediate tolerance" was shown under the treatment by apples, oranges, plums, cherries, blackberries, blueberries, black raspberries, currants and pears.

First objectionable effect resulting from excessive CO_2 treatments was a slight loss in aroma. With more prolonged or severe treatments, this was followed by a still greater loss of flavor, and sometimes by the development of an odor of fermentation. Products having a definite and characteristic aroma were most easily affected.

Pyrites Production

World production of pyrites in 1930 is placed at 7,580,000 metric tons by the Statistical Yearbook of the League of Nations. Over 80 per cent, 6,098,000 tons, was produced in European countries; about 10 per cent, 822,000 tons, in Asia; America, 402,000 tons, and Africa, 21,000 tons. Russia is separately listed with 242,000 metric tons, while Cyprus production is grouped with Asiatic, of which the only other producer is Japan (561,000 tons).

Europe being the center of both production and consumption of pyrites, the following record of production in individual countries is of interest:

	Metric tons
Czechoslovakia	22,000
France	198,000
Germany	290,000
Greece	178,000
Italy	731,000
Norway	718,000
Poland	11,000
Portugal	399,000
Roumania	24,000
Spain	3,417,000
Sweden	60,000
Yugoslavia	50,000

Potassium chromate and bichromate into Great Britain and Northern Ireland during June came entirely from the U. S., and amounted to 100 cwt., valued at £207. Sodium bichromate imports were 1,198 cwt., worth £1,927, U. S. supplying 1,000 cwt., worth £1,628 of this total.

Copper sulfate world production in 1930 was estimated at 227,000 metric tons, according to Statistical Yearbook, League of Nations. Production estimates for individual countries were: Italy, 69,000 tons; United Kingdom, 43,000 tons France, 40,000 tons; Belgium, 19,000 tons; U. S. 17,000 tons; Germany, 15,000 tons; Hungary, 9,000 tons; Spain,6,700 tons; Austria, 1,100 tons.

Swedish Arsenic

Sweden is suddenly becoming an important factor in the international arsenic market. Prior to 1926 she produced very small quantities. Copper ores now being treated at the new Boliden smelter, on the Gulf of Bothnia, contain unusually high percentages of arsenic and reports from abroad indicate a possible production of over 50,000 tons annually. This is more than the present world total.

One large concrete storage has been completed. The consumption of arsenic is growing. Previous to the World War production amounted to about 10,000 tons; in 1920 it reached 25,000 tons, and in recent years, the estimated total runs close to 45,000 tons annually. Previous to the war Germany was the largest pro-

ducer. In the past few years the U. S. became the largest with Mexico second. The position of Germany now is relatively unimportant.

Lime in 1931

Lime to the value of $18,167,660 at factory prices was manufactured in U. S. in 1931, according to the Census of Manufacturers, Census Bureau, Washington, which stated that this total was a decrease of 38.7 per cent as compared to the total of $29,627,681 reported for 1929, the last preceding census year. The total for 1931 comprised 1,503,258 tons of quicklime, valued at $9,631,937; 1,138,786 tons of hydrated lime, valued at $7,095,971; and 313,929 tons of agricultural lime, valued at $1,439,752. There were 205 establishments reporting in 1931, as against 237 in 1929, with 6,679 wage earners who received $5,999,813 in wages in 1931, as against 8,554 workers receiving $9,476,314 in 1929.

Electrothermic H_3PO_4

The semi-large-scale industrial plant for the electrothermic production of phosphoric acid, that has been designed and erected by the Soviet Institute for Fertilizer Research, is reported in satisfactory operation for some time, and has successfully produced several tons of acid. The phosphoric acid is obtained from crude Chibinska apatite ore, which contains 22 to 27 per cent of phosphorus pentoxide. According to the temperature at which the treatment of the ore is effected, concentration of the phosphoric acid produced ranges from 70 to 90 per cent. The acid mist is precipitated electrostatically in a Cottrell apparatus. Hitherto only yellow and red phosphorus have been prepared in Soviet Russia, very small quantities of phosphoric acid being made by the combustion of phosphorus. It is stated that the whole of this new plant, which consists of a three-phase electric furnace, condensers, purification towers, etc., has been erected entirely from Russian material without any foreign aid at all.

Of the 4,110 ice plants reporting under the 1929 census of manufacturers, 2,872 consumed chlorides and 3,155 used ammonia. The value of these chemicals used by ice plants in 1929 was: calcium chloride, $335,740; common salt, $643,701; ammonia, $1,311,244.

Deutsche Gasolin A. G., I. G. subsidiary, is marketing a new blended motor fuel compound of 78 per cent of synthetic gasoline (produced at Leunawerke), and 22 per cent of alcohol.

Calcium Chloride Association members are planning an extensive publicity campaign for "Dustless Coal." Space has been reserved in *Good Housekeeping* and *American Magazine*.

New SO_2 Process

A Finnish patent, 13,689, deals with a new process for the manufacture of concentrated liquid sulfur dioxide. Concentrated or liquid sulfur dioxide is made from gaseous mixtures containing sulfur dioxide by absorbing the latter under pressure in a liquid and then driving out the gas by reducing the pressure or heating or by both. The conditions of absorption, particularly the pressure and the temperature, are such, that the ratio of the per cent by volume of sulfur dioxide content in the gaseous mixture to the per cent by weight of the sulfur dioxide absorbed in the liquid is as 3 to 2. Hence, when the gaseous mixture contains 18 per cent by volume of sulfur dioxide, a sulfurous acid solution will be obtained, which contains a minimum of 12 grams of sulfur dioxide per 100 grams of solution. The gaseous mixture is compressed in two or more stages with the intervention of a cooling step between the stages.

Chemical Age (London, August 27) contains an excellent summary of chemical industry in the Soviet Union.

Potassium carbonate exports from Germany dropped from 20,055 metric tons in 1929 to 12,422 tons in 1931. Production in 1931 was off 50 per cent from the 1929 level of 35,000 tons. U. S. Shipments totaled 9,181 tons in 1929 and 5,217 tons in 1931. Present rate of imports is at the 1931 level.

Sicilian Mines Resume

Sicilian sulfur mines largely idle since the dissolution of the sulfur consortium will reopen. Under the auspices of the Ministry of Corporations sulfur mine operators and workers' syndicates reached new agreements. When the mines closed wages in general were above the contractual mininum. It has been agreed to reduce these extra payments by 30 per cent to 50 per cent, according to the nature of the work done, but to maintain the basic wage at its present point.

Metals and Alloys

Steel Industry's Future

Engineering Foundation's iron alloys committee made public Sept. 19, special report on steel trade's future. Said Frank A. Sisco, member of the committee:

"The future of the steel industry lies in a turn to quality production rather than the quantity production of the past, and tremendous improvements and extensions in the manufacture and use of high-quality alloy steels should be forthcoming within the next few years.

"There are thousands of possible combinations in alloy steels, and of these only a hundred or so have been developed. Their development, however, already has proved to be of vast importance to the public. For instance, the discovery of large deposits of molybdenum in Arizona, and the consequent industrial discovery of molybdenum steel, made possible the automobile and the airplane."

Molybdenum Corp. of America agrees to take full output for ten years of molybdenum concentrates discovered recently at Mammouth, Ariz. This action increases the company's own reserves derived largely from mines at Questa, N. M. Concentrates will be shipped to refining plant at Washington, Pa.

Copper Statistics

World stocks of refined copper in the hands of producers and fabricators at the close of August were 796,000 tons, compared with 798,000 tons at the end of July, according to an estimate by the *Daily Metal Reporter*. Stocks of producers decreased 3,000 tons, while those of fabricators gained about 1,000 tons.

The production of refined copper in August was approximately 64,000 tons, against 74,000 tons in July. The combined domestic and foreign shipments are estimated at 66,300 tons, against 55,600 tons in July.

Canadian Minerals

Official figures of the production of nonmetallic minerals in Ontario, Canada, for the first six months of 1932 have been issued by the Ontario Bureau of Mines.

		First six months 1932	1931
Actinolite	tons	.....	7
	value	.....	$80
Arsenic	pounds	1,628,723	2,108,076
	value	$65,149	$82,224
Diatomite	tons	9	6
	value	$360	$84
Feldspar	pounds	1,859	1,975
	value	$21,636	$23,534
Graphite	pounds	255	383
	value	$12,932	$21,198
Gypsum	tons	20,389	31,358
	value	$188,779	$227,546
Mica	tons	51	385
	value	$671	$15,270
Quartz and quartzite			
	tons	32,769	50,427
	value	$46,440	$81,957
Salt	tons	112,387	104,592
	value	$882,352	$838,336
Talc	tons	6,366	5,856
	value	$59,107	$59,625

Rhenium and gallium are now being isolated on a technical scale from waste products in working up cupriferous slate deposits in England and Germany. Leopoldshall works, Vereinigte Chemische Fabriken is capable of turning out 300-400 pounds of rhenium annually. Rhenium has possibilities as a catalyst, and is being exploited in thermo-element design.

Fine Chemicals

Italian Citric Acid Status

Commenting editorially on the status of the Italian citrus industry, *The Chemical Trade Journal* (London) states: "The dissolution of the Sicilian Sulfur Consortium makes somewhat similar action by the Italian government in the case of the lime-citrate industry a not unlikely contingency."

That Italian producers are facing a serious problem is quite evident. Since 1908 citrate of lime producers have been forced to deposit stocks with the Camera Agrumaria, which fixes selling prices and advances payments. Ten years ago the Sicilian authorities decided to increase manufacture of citric acid and started a program of rationing foreign shipments of lime. Such action was quite successful. Whereas in 1912-13 only 17 per cent of the lime was worked up to acid, in 1923-24 the amount reached 50 per cent, and in 1927-28 it reached 75 per cent.

Development in this country of the fermentation process has worked considerable havoc with Italian trade, taking away a large part of the U. S. market and also considerable tonnage in other countries. Stocks of lime citrate in the hands of the Camera at the end of May this year are reported to be nearly eight and one-half million kilos.

Future Plans

The Italians, of course, recognize the conditions facing the industry. In a paper recently read by Dr. N. Parravano before the Fourth Italian National Congress of Pure and Applied Chemistry, he urged a complete reorganization, stating that under present conditions four distinct interests—the fruit growers, citrate makers, the Camera and the citric acid manufacturers cannot all hope to make a profit. Consolidation, in Dr. Parravano's opinion, is essential to enable the Italians to compete with the fermentation process.

The price of citric acid has declined steadily in this country for the past three years, due mainly to competitive conditions between foreign and domestic suppliers. The 1930 high was 59 cents against 29 cents, the current figure. The citric acid situation was reviewed in detail in CHEMICAL MARKETS (August, 31, p. 152).

Camphor Importations

U. S. increased camphor importations during the first six months of 1932, receipts of the natural crude product totaling 1,126,000 pounds valued at $322,000, as compared with 743,000 pounds worth $277,000 in the corresponding period of 1931. Receipts of natural refined camphor aggregated 785,000 pounds ($283,000) and 687,000 pounds ($330,000) respectively. Imports of synthetic camphor amounted to 1,128,000 pounds ($315,000) and 1,055,000 pounds ($351,000) in the above order.

Glycerine production during the first half of 1932 and producers' stocks on June 30 are shown in the following table in comparison with the same period of the previous year:

PRODUCTION

	Pounds 1932	1932
Glycerin, crude	70,361,387	71,027,324
dynamite	21,099,829	18,105,160
chemically pure	37,438,713	33,270,286

PRODUCER'S STOCKS

	Pounds 1931	1932
Glycerin, crude	13,183,235	20,200,388
dynamite	11,685,623	15,156,098
chemically pure	10,778,964	13,565,980

Mercury Cartel Ends

Italo-Spanish mercury cartel (Mercurio Europeo) is officially dissolved Oct. 1, 1932. Actual world production of mercury in 1931 was 3,267 tons. Of this total Italy was responsible for 1,241 tons, U. S. 853 tons, Spain 673 tons, and Mexico 251 tons. Italian production in the first half of 1932 is reported to have been 606 tons.

Naugatuck Chemical, U. S. Rubber's chemical subsidiary, is producing several important aromatic chemicals including alpha amyl cinnamic aldehyde, heptyl alcohol, heptyl heptote, and heptoic acid.

R. M. Cain, Abbott Laboratories vice-president, sailed with Mrs. Cain and their daughter on the "Leviathan" Sept. 17 for a vacation in France and England.

Mercury deposits, ore assaying as high as two per cent, reported from Cerro de Cuarenta zone, San Bernardo municipality, Durango, Mexico. Furnace operations expected shortly.

Resinous Products & Chemical, Philadelphia, now producing commercially sebacic acid, capryl alcohol, and methyl hexyl ketone.

William Hosken, 48, president, Hosken & Co., N. Y. City, American representatives Hoski (Jap.) quinine, died suddenly Sept. 15.

Henry C. Trumbower, vice-president, John Wyeth & Brother, Philadelphia, died suddenly Sept. 1 from heart attack in a Chicago hotel. He had been associated with his company for 43 years, entering the employ of the late John Wyeth as his secretary.

James J. Kerrigan, Merck vice-president and general manager, addressed first fall meeting of the drug, chemical and allied trades section, N. Y. Board of Trade Sept. 27 on "Business Conditions in Central Europe."

"A. R." Designation

Mallinckrodt's monthly price list will now include the entire analytical reagent chemical line. All analyzed chemicals are now designated "A. R." (Analytical Reagent). The terms "C. P." and "Reagent Quality" have been discontinued, excepting that the mineral acids and ammonia water will still be carried as "C. P." However, acids and ammonia of a higher degree of purity will also be marketed under the "A. R." designation. The term "Analytical Reagent" has been sponsored by a special committee of the A. C. S. which was formed to establish standards and formulate definite procedures for estimating impurities.

Cinnabar ore is reported near Prineville, Wyo., by Grover T. Keeton and A. T. Champion.

Platinum Cartel Status

Due to the non-existance of machinery to restrict output the international platinum association of producers, Consolidated Platinums, Ltd., with headquarters in London, is likely, according to foreign reports, to revert back to simply a propagandist organization. Its recent efforts to peg prices internationally have not been entirely satisfactory.

Dr. J. K. L. Snyder, formerly with J. T. Baker, joins Merck as assistant to James J. Kerrigan.

Rio Grande Quicksilver is building "Walkerville" a town near its works five miles from Terlingua, Texas.

Soviet government, after what is reported as being successful attempts at growing camphor trees at Adsharistan on the Black Sea, is planning erection of an extraction plant.

Charles Pfizer & Co's., October price list shows 13 declines and no advances.

Charles Wehrly, mercury expert, and for many years chemical sales manager for Henry W. Peabody & Co., joins Merchants Chemical. He will continue to represent Bradley Mining of San Francisco, large domestic mercury producer. Mr. Wehrly was for years vice-president of Alex Pickering & Co., Ltd., London, one of the largest international distributors of quicksilver, and served under Dr. Charles H. Herty as an advisory chemist at the meetings of the first Reparation Commission.

Coal Tar Chemicals

Dye Importations

Imports of synthetic dyes into the U. S. in August totaled 369,327 pounds, valued at $328,560, it is reported by the Tariff Commission and Dept. of Commerce.

These figures compare with 454,165 pounds, valued at $395,620, imported during the same month last year. Imports during the first eight months of 1932 have amounted to 2,355,687 pounds, valued at $2,077,651; imports in the corresponding period of 1931 were 3,239,886 pounds, valued at $2,816,593.

Country of Origin

	—Percentages—	
	Aug. 1932	*Aug. 1931*
Germany	65.33	68.39
Switzerland	32.32	29.86
England	1.99	1.75
Other	.36	....

Leading Dyes

	Pounds
Vat golden yellow, GK double paste (single strength)	17,976
Formal fast black G concentrated	13,227
Diazo brilliant green 3G	9,275
Fast jet black 2BR concentrated	7,221
Vat printing yellow 5GK double paste (single strength)	6,800

Imports of aromatic chemicals during August totaled 4,661 pounds, valued at $8,748; imports in the same month last year amounted to 5,961 pounds, valued at $10,007. The total for the first eight months of 1932 is 47,775 pounds, valued at $105,886, compared with 37,109 pounds, valued at $56,875, for the same period in 1931.

Medicinals, photographic developers, intermediates, and other coal tar products amounting to 162,300 pounds, valued at $52,994, were imported in August, compared with 331,606 pounds of these products, valued at $84,394, imported during August last year. Imports so far this year have amounted to 820,444 pounds, valued at $413,025; imports in the first eight months of last year were 1,183,467 pounds, valued at $526,235.

Imports of color lakes during August amounted to 1,202 pounds, value not given. This brings total imports this year to 11,774 pounds, compared with 5,476 pounds in the 1931 period.

British Creosote Trade

British Government Bluebook ("Annual Statement of the Trade of the United Kingdom with British and Foreign Countries") reporting on trade on creosote oil states: "The details now available on British export trade in heavy coal tar oils, particularly creosote oil, show the decline in American takings to be entirely responsible for the depressed trade. Some of the markets actually increased their imports of British creosote last year as against 1930. For instance, Norwegian takings rose from 266,180 gallons to 574,361 gallons; French takings from 821,568 gallons to 1,373,472 gallons; and Italian takings from 27,281 gallons to 124,353 gallons. In regard to the U. S. A., the figures show a decline in imports of British creosote from 22,524,112 gallons in 1930 to 7,962,142 gallons in 1931, the value of this trade in the two years being £566,180 and £178,414 respectively."

German Benzol Imports

German benzol imports during the first six months of 1932 were 44,059 metric tons, of which 15,732 metric tons came from the U. S., compared with imports of 61,068 tons (23,941 from the U. S.) in the first half of 1931. German production of benzol is estimated to have dropped from 340,000 tons in 1930 to 250,000 tons in 1931, according to information received recently by the Dept. of Commerce from the trade commissioner at Berlin. While Germany is the most important world market for benzol, high import duties and competition of alcohol in motor fuel blends during the past two years have reduced the demand. An analysis of the German benzol market may be obtained upon application to chemical division, Bureau of Foreign and Domestic Commerce, Washington.

Synthetic Tanning Imports

During the first six months of 1932 imports of coal-tar synthetic tanning agents listed below exceeded total imports for the calendar year 1931. A greater variety of agents was imported than formerly. Of the 1932 imports Switzerland supplied 16,511 pounds, the remainder coming from Germany.

	1930	*1931*	*Six months 1932*
	Pounds	*Pounds*	*Pounds*
Irgotan	80,060	12,833	....
Irgotan LV	.....	.....	507
Tanesco	2,645	827	.....
Tanegan H	.....	.....	466
Tanegan LL	.....	110	3,236
Thiotan MS	.....	160	5,001
Thiotan RS	2,700	3,000	10,009
Resolin NF	.....	500	1,501
Others	.....	551	.....
Totals	85,405	17,981	20,717

French Coal Tar Trade

French imports of coal tar during the first five months of 1932 amounted to 81,905 metric tons, of which Great Britain supplied 39,263 tons, Belgium 10,893 tons, and Germany 5,430 tons.

This is a considerable increase over total imports of 40,684 tons in the same period of 1931 and follows the increase in the year 1931 to 130,567 tons over the 95,177 tons received in 1930.

During 1931 the U. S. supplied 8,976 tons compared to none in 1930, and it is believed that it accounts for a large part of the 1932 receipts.

I. G., in its report for the second quarter of this year, states that turnover in dyestuffs, chemicals, pharmaceutical products, photographic material, rayon and fertilizers have all undergone drastic reductions.

Benzol Purification

A new electrolytic-oxidation process for the purification of benzol is noted in *Das Gas-und Wasserfach* (Aug. 6, 1932, 75, p. 649) which contains an abstract of a paper prepared by the discoverers. According to the abstract, ½ parts of benzol are mixed with one part of 15-20 per cent sulfuric acid which has no purifying action, but acts chiefly as a conductor for the current. The mixture is electrolyzed in an autoclave, the anode space being stirred. The active oxygen formed frees the benzol from the greater proportion of the resin-forming materials. The only additional treatment required is a final wash with water and dilute caustic soda.

The degree of purification depends on the time of treatment and, to a large extent, on the current density at the anode, the best material for which is lead. All benzols are not equally amenable to the treatment. It seems that purification proceeds best in presence of the fractions boiling above 145° C. Possibly complexes are formed between the high-boiling resin-forming cumarone compounds and the low-boiling, readily resinifiable, unsaturated compounds. The process, for which a patent has been applied, is being further developed by the Benzol Verbano of Bochum with a view to its adaptation to all practical requirements.

Messrs. Brotherton & Co., Ltd., Leeds, large English dye plant, close works at Bromborough, Cheshire, for an indefinite period. One hundred employees are thrown out of work, but the firm is paying part wages. An over-accumulation of dyes and colors is stated to be the result of this action.

An English patent, 372,801 (1931) owned by the I. C. I., claims removal of ammonia and other noxious substances from gas liquor to allow its discharge into a stream or sewer by passing steam, with or without air and flue gases, through the liquor, the gases evolved being burnt by passage through hot coke in a producer retort. The liquor is perferably preheated by and passed in countercurrent to the steam down a packed column or still fitted with bubble plates.

Canadian coal tar distillation plants owned by three companies were in operation during 1931 with a total production valued at $2,578,102, considerably below the $3,334,066 valuation of their output in 1930.

Fertilizers

V-C., Armour Merger Fails

Outstanding in the month's fertilizer news is the complete abandonment of the proposed merger of Armour Fertilizer and V.-C. Suggested early in June the management of both companies anticipated no difficulties in effecting the consolidation based on the plan of reorganization as outlined in CHEMICAL MARKETS (July, p. 51).

At a stockholders' meeting Sept. 1 President Wilson of V.-C. suggested adjournment until Sept. 23 in order to permit the minority interests to draw up a supplementary agreement for consideration. Minority stockholders objected particularly to provision giving Armour 61 per cent and V.-C. 39 per cent of the common stock of the new company. An equal division of the assets was sought by a group led by Bryan, Kemp & Co., of Richmond, Va. On Sept. 17 directors of V.-C. notified Armour officials that they were unable to obtain sufficient proxies to ratify the plan as originally drawn up and that the negotiations were definitely ended.

Bryan Kemp & Co. who led the opposition to the merger of V-C. with Armour Fertilizer has sent a letter to stockholders of V. C. stating that as the result of negotiations with a majority of the board of directors it has been agreed to increase the board to 15 giving representation to the interests of prior preferred stockholders. Four new members to be elected to the board are Jacquelin P. Taylor, director of Universal Leaf Tobacco and P. Lorillard Co.; Thomas B. Scott; Leon S. Nelson and George S. Kemp, all of Richmond. They therefore advise stockholders to send in proxies to the management.

Charles G. Wilson, informed V.-C. stockholders that he will not be a candidate for re-election to the board or presidency at annual meeting Oct. 12. George W. Holderness is elected executive vice-president and it is expected will be elected president, together with Spencer L. Carter, as first vice-president in charge of operations, and J. C. Carroll as vice-president in charge of sales.

Florida Association

Florida fertilizer manufacturers organize under the name Florida Agricultural Research Institute for the purpose of gathering, compiling, and disseminating information on the use of fertilizers. Institute is headed by C. T. Melvin, Gulf Fertilizer, Tampa, president; Bayless W. Haynes, Wilson & Toomer, Jacksonville, vice-president; W. C. Johnson, American Agricultural Chemical, Pierce, secretary; and Fred Coffee, Armour Fertilizer, Jacksonville, treasurer. Directors include, in addition to the officers, W. L. Waring, Jr., Lyons Fertilizer, Tampa; John Burke, V.-C., Jacksonville; and Ray Trueman, Trueman Fertilizer, Jacksonville. Robert P. Thornton is director of research.

August Tag Sales

N. F. A. August tag sales figures show that while for the first eight months of 1932 sales in the 13 southern states were but 61 per cent of the sales totals reached for the same eight months last year, and about 44 per cent of the sales for the same eight months in 1930, figures for August of this year show sales aggregating 99 per cent of the August, 1931, figures. In three mid-western states cited, sales, however, for the same month were but 34 per cent of sales in the same state in the same month last year.

Fertilizer Imports

August imports of fertilizer and fertilizer materials were less than one-half of those in August, 1931 and only about one-third of those for August, 1930. For the second consecutive month there were no imports of sodium nitrate. During August, 1931 more than 35,000 tons were imported. Imports of sulfate of ammonia totaled more than 18,000 tons compared with less than 7,000 tons imported during August, 1931. During August, 2,714 tons of superphosphate, 530 tons of sulfate of potash and 67 tons of substances used chiefly for fertilizer were imported from Japan. August exports of fertilizer and fertilizer materials were slightly less than one-half of those for August, 1931 and for August, 1930. Exports of phosphate rock and superphosphate declined sharply. Exports of "other nitrogenous chemicals" which classification includes synthetic sodium nitrate, totaled 14,383 tons compared with only 7,233 tons for August, 1931 and 2,258 tons for August, 1930. Of the 14,383 tons exported during August, 14,152 tons of nitrogenous chemicals were sent to France. The value of this commodity was placed at $367,727.

Office Cherfien des Phosphates, Morocco, reports sale of 457,798 tons of phosphate rock during first six months of this year. This figure compares with the 521,000 tons for the first half of 1931 and with the 1,040,000 tons for the whole of 1931. Of the export of phosphate rock to June this year 161,000 tons went to Spain, 59,700 tons to France, 55,150 tons to Holland, 41,900 tons to Italy, 35,300 tons to England, 27,600 tons to Japan, and 12,000 tons to Germany.

Dr. Giacomo Fauser, inventor of the Fauser process for nitrogen fixation, arrives in N. Y. City to visit Trail plant of Consolidated Mining & Smelting (Canada) to inspect Fauser unit recently installed. Dr. Fauser returns shortly to Paris for a conference with Soviet officials. Two Fauser units have already been installed in Russia and the Soviet is contemplating a third.

Farmers' Fertilizer Bill

According to the 1929 Census, farmers spent in 1929 $955,000,000 for labor; $919,000,000 for feed; $692,000,000 for machinery, tractors, trucks and automobiles; and $271,000,000 for fertilizer, including lime and manure. The U. S. Dept. of Agriculture estimates that farmers paid in all kinds of taxes in 1927 $901,000,000, and taxes have been reduced little if any since that date. It is estimated that farmers pay $732,500,000 in interest on all forms of indebtedness. Among the farmer's expenditures fertilizer is only a poor sixth.

World Nitrogen Capacity

World capacity for production of nitrogen compounds has increased from 2,500,000 tons of nitrogen at the end of 1928 to 3,200,000 tons at the end of 1931, according to a recent German estimate.

Against this 60 per cent increase in capacity, world production dropped from 2,400,000 tons in 1929, to 1,900,000 tons in 1931. In 1929 production amounted to around 96 per cent of capacity; but it was only 60 per cent in 1931. World sales, moreover, contracted in a much greater degree dropping from 1,900,000 tons in 1929 to 1,100,000 tons in 1931. In 1931, total sales correspond to only 35 per cent of total productive capacity (against 76 per cent in 1929) and to 58 per cent of production (against 80 per cent in 1929).

The trends of production capacity, output, and sales over the past three years have been as follows:

	Tons of nitrogen		
	1929	*1930*	*1931*
Capacity	2,500,000	2,800,000	3,200,000
Production	2,400,000	2,000,000	1,900,000
Sales	1,900,000	1,600,000	1,100,000
		Percentage	
Production to capacity	96	75	60
Sales to capacity	76	57	35
Sales to production	80	76	58

New French potash deposits in the Landes (southwestern) region are to be exploited.

Potash shipments increase in September, according to an announcement made at the annual meeting of the German potash cartel at Frankfurt. It now appears that totals for the year will not be more than 600,000 double hundredweights below 1931 when 9,000,000 double hundredweights were shipped.

Agricultural Potassium Phosphate Co., reopens plant at San Pedro, Cal.

Rufus C. Jackson, pioneer phosphate man of the Tennessee district, died Sept. 2 after long illness. His company, Jackson Phosphate, became a unit in International Agricultural. He was also member of the *Fourth Estate*—newspaper editor and publisher at Mt. Pleasant, Tenn.

A. J. Whitman, A. A. C. Co.'s traffic manager and representative of the traffic committee of the N. F. A., reports Trunk Line Association is settled on a $2.50 charge instead of $5 for paper lining cars for nitrate of soda shipments.

German presidential decree authorizes Minister of the Treasury to extend credit guarantees on fertilizer purchases by farmers to the total amount of 14,200,000 marks.

John T. Wilson and Alfred Levinger elected directors of V.-C.

C. Tennant Sons & Co., N. Y. City, U. S. and Canadian selling agents for Palestine Potash, Ltd., imports first shipment amounting to 500 tons of potash extracted from the Dead Sea.

G. P. Walton and R. F. Gardiner, Bureau of Chemistry and Soils, are granted service patent 1,858,230 for a process to increase the chemical fertilizer value of natural peat by chemical treatment.

H. J. Baker & Brother, N. Y. City dealer in fertilizer chemicals, opens Savannah branch in the Savannah Bank and Trust Bldg., with James H. Henderson as manager.

A. T. Dukes resigns as Baltimore branch manager for F. S. Royster Guano Co., Norfolk, and M. F. Wright, Jr., of Syracuse goes to Baltimore in his place.

U. S. Potash, Carlsbad, N. M., is planning construction of a second shaft near Loving. New Mexico Potash & Chemical is running test wells on a large tract.

El Mercurio, Chilean newspaper, proposes, editorially, delay in Cosach negotiations pending national congressional elections Oct. 30.

"Effects on Cotton of Irregular Distribution of Fertilizers" by A. L. Mehring and G. A. Cumings, Dept. of Agriculture, and which appeared recently in the Journal of Agricultural Research is a further report on the work inaugurated in 1929 to study methods of applying fertilizers to cotton and in which the N. F. A. cooperated for three years.

Belgian nitrogen producers are forming cooperative association to exchange technical information. Participants are: Societe Belge de l'Azote, Carbo Chimique, Produits Chimiques de la Meuse, Produits Chimiques du Marly, Union Chimique Belge, Comptoir Belge des Engrais Azotes, Centrale pour la Fabrication de l'Ammoniaque Synthetique.

Henry G. Evans, 55, president, Capital City Fertilizer, Montgomery, Ala., died Sept. 1 at Roxbury, Mass.

New Mexico Potash & Chemical is drilling on holdings of 50,000 acres in Eddy County, Carlsbad, N. M.

Frank L. Mason, Rockingham, N. C. fertilizer dealer, files voluntary bankruptcy petition. Liabilities, $16,010, assets, $7,825.

V-C's Porto Rican plant at San Juan is reported destroyed.

Production and sales syndicate for ammonium sulfate is organized in Japan by Mitsui Bussan Kaisha (representing Electro Chemical Industry Co.), Mitsubishi Shoji Kaisha, Showa Fertilizer Manufacturing Co., Dai Nippon Artificial Fertilizer Co., Japan Nitrogen Fertilizer Co., and Sumitomo Fertilizer Co.

"With the uncertainty in raising crops and the attendant risks in all lines of agriculture, we believe that as soon as possible our industry should be put on a cash basis and that fertilizers should be sold on an f. o. b. factory basis and not at a delivered price," states President John J. Watson, International Agricultural Chemical, in letter to stockholders. "These two measures would affect a substantial saving in the delivered cost of fertilizer to the farmer through lessening the cost of delivery and reducing the cost of marketing. Our corporation is working toward this end."

Gums and Waxes

Importers Meet

Members of American Gum Importers' Association at quarterly meeting and outing at Briarcliff Lodge, Briarcliff, N. Y., Sept. 14, hold spirited discussion on the new research program sponsored by the Association and scheduled to start in the laboratory of Hilton & Davis, Cincinnati. Golf tournament winners: A. J. Wittenberg, W. A. Patterson, C. F. Walden, M. L. Van Norden, H. E. Hendrickson, H. Passof, S. Stroock, A. Schawachter, P. S. Busschaert, G. H. Lincks, T. J. France and O. G. Innes.

Bids for 57,000 pounds of gum, dammar, Batavia, were invited by the Navy Department returnable Oct. 20 at 11.30 A.M. Proposals call for the gum to be supplied in commercial containers and of standard grade known as A-E mixed packing and shall be suitable in all respects for the manufacture of paint drier and dammar varnish.

Plant to refine kauri gum chips and lower grades of gum, erected at Henderson, Auckland, is about to start. Plant will utilize method evolved by New Zealand Department of Scientific and Industrial Research.

Association of Glue Manufacturers is issuing 32 page booklet on history of manufacture and use of animal glue. Copies may be obtained from the secretary, 55 W. 42 st., N. Y. City.

A. H. Hoffman, Strohmeyer & Arpe, and president, N. Y. Wax Importers' Association, arrived on the "Berengeria" Sept. 29.

John A. Engers, formerly of General Plastics, joins sales staff of A. E. Claus & Co., N. Y. City importers of varnish gums.

Total movement of copal gum from Belgian Congo to Antwerp during the first seven months of 1932 showed little change contrasted with figures for the corresponding period in 1931. However, a more even month to month trade was noticeable in the current period:

Receipts (Metric Tons)

	1932	*1931*
January	1,420	189
February	561	1,785
March	1,087	1,224
April	923	976
May	825	285
June	884	1,239
July	581	718
Total six months	5,700	5,698

U. S. production of natural dyestuffs dropped in value from $2,425,984 in 1929 to $1,615,990 in 1931. Logwood extract, liquid and solid, continued to be the chief item of the domestic manufacture with 17,031,755 pounds worth $1,250,594 in 1931, compared with 19,357,708 pounds worth $1,843,448 in 1929. Quercitron extract, liquid and solid, was produced to the extent of 1,437,530 pounds ($63,156) in 1931, and 2,419,874 pounds ($171,702) in 1929. Other extracts were valued at $302,240 in 1931 and $410,834 in 1929.

Paints, Lacquers and Varnish

Lacquer Sales

Sales of lacquer by 112 manufacturers for the quarter ended with June at 4,239,106 gallons valued at $6,495,698, compared with 4,862,895 gallons valued at $7,382,228 for the first quarter of 1932 and 6,824,180 gallons valued at $11,105,743 for the second quarter of 1931.

Sales of finished lacquer were reported as 2,152,206 gallons valued at $4,501,111 for the quarter against 2,430,554 gallons valued at $5,004,037 in the first quarter and 3,371,682 gallons valued at $7,616,435 in the second quarter of last year, while sales of thinners were 1,920,643 gallons valued at $1,752,546 against 2,178,473 gallons valued at $2,032,355 in the first quarter and 3,157,023 gallons valued at $3,036,692 in the second quarter last year, and sales of dopes totaled 166,257 gallons valued at $242,041 against 253,868 gallons valued at $345,836 in the first quarter and 295,475 gallons valued at $452,616 in the second quarter of 1931.

Carbon Black to Germany

Carbon black imports into Germany showed gains in both quantity and value during first half of 1932, contrasted with trade during corresponding period of 1931. Total purchases amounted to 3,209 metric tons, valued at 1,737,000 marks, compared with 2,914 tons, worth 1,703,000 during the same months of 1931. U. S. supplied practically the entire requirements, or 3,104 tons, in the first half of 1932 and 2,877 tons in the 1931 period.

F. F. Kopecky accepts position with Ellis Laboratories, Montclair, N. J.

Indian Lac Research Institute, Namkum, Ranchi, B. & O., India, is publishing several important booklets of value to shellac producers and users.

C. J. Overmyer, research chemist, with Peaslee Gaulbert Paint & Varnish, the Louisville division of Devoe & Raynolds, is promoted to chief chemist of the Chicago division, to fill vacancy created by death of Norman Carow.

Two of the three Shanghai paint factories have resumed operations. Imports of paints, varnishes and lacquers into China in 1931 had a value of $827,770, of which the U. S. supplied $165,000 worth.

William C. Dabney, Jones-Dabney Co., Louisville, chairman, Kentucky division, National Economy League, comes to N. Y. City with other members of the Kentucky League's committee to attend parent organization meeting.

L. W. Ryan, formerly director of research for Titanium Pigment, is engaged by United Color and Pigment, Newark, N. J., in a similar capacity.

Dr. Herbert Hoenel, Beck, Koller & Co., Detroit resin manufacturer, returned Sept. 11 from European trip and will complete several new developments in the company's line of synthetic resinous products.

Ernest Schiller, chief chemist, Reynolds Metals Co., Louisville, Ky., addresses first meeting of the Louisville Paint and Varnish Production Men's Club Sept. 21. P. S. Eddy, Allied Paint Co., is the new president, succeeding L. K. Scott, Jones Dabney Co.

James E. Kortum joins Lacquer Service Co., St. Louis, Mo., as general manager.

F. J. Van Vranken of J. S. & W. R. Eakins, Brooklyn color manufacturers, plays host to Save the Surface Golf Club Sept. 27 at Wheatley Hills Country Club, East Williston, L. I.

To stimulate clean-up and paint-up activity during the Fall season, National Clean Up and Paint Up Campaign Bureau is issuing new catalog of clean-up and paint-up display material carrying new low prices on many important items. A copy of the new catalog will be mailed upon request. Address the bureau at 2201 New York ave., N. W., Washington.

Graham W. Corddry, formerly Devoe & Raynolds, joins Titanium Pigments' N. Y. City sales staff.

George H. Lincks, N. Y. City gum importer, is offering two new synthetic resinoids for varnishes and lacquers. One is adaptable for dull, flat and egg shell finish varnishes and the other for lacquers employed in glass decoration.

Sherwin-Williams guarantee dealer paint prices against decline to Jan. 1.

Clarence Silleck joins technical service department, C. J. Osborn Co., N. Y. City pigment and dry color importer. He is a nephew of the founder.

A. E. Starkie Co., Chicago, is appointed distributor in Chicago territory for Asbestos, Ltd.

Kentucky Color and Chemical discontinues agency agreement in Detroit and appoints Richard Katz, Jr., sales representative. Mr. Katz was in Kentucky's N. Y. City office. He was formerly sales manager for Ansbacher-Seigle.

Several shellac importers are said to be negotiating for the Angelo Brothers' (Calcutta) representation now held by Henry W. Peabody & Co.

Norman J. Carow, 29, chief chemist, Devoe & Raynolds' Chicago division, died suddenly Sept. 5 following appendicitis operation. He was in Devoe & Raynolds' employ for nearly nine years.

Berry Bros., Detroit, marketing "Berryspar" a new bakelite base varnish, resistant to heat, water, and alcohol.

Solvents

Fatty Alcohol Patents

Nelson Littell, senior member, Hammond & Littell, patent attorneys, arrived Sept. 9 on the "Berlin" with patents valued at $2,000,000 for newly formed American Hyalsol Corp., covering production of higher fatty alcohols. American Hyalsol licenses P. & G., du Pont, and National Aniline to produce in U. S. Dr. Lweis H. Marks, Alcohol Institute secretary, is president of American Hyalsol and Mr. Littell, secretary-treasurer.

U. S. I. is completing installation of 15 new fermenters at Baltimore, each unit with a capacity of 134,000 gallons.

Rossville Commercial Alcohol moves Chicago offices to 365 E. Illinois st., phone, Delaware 4940.

Niacet Chemical, Niagara Falls, N. Y., is producing commercial crotonic acid. Product prevents sedimentation and gelatinization of naphthenate resinate driers in volatile organic solvents.

U. S. I. is shipping anti-freeze alcohol in new double head drum which permits delivering dealer advertising matter with the drum itself.

Rossville's Lawrenceburg plant damaged by fire with $40,000 estimated loss covered by insurance. Shipments unaffected.

Sharpless Solvents plans removal of plant from Belle, W. Va., to Wyandotte, Mich., in time to begin operations Feb. 1, 1933, according to Vice-president Lee H. Clark.

Naval Stores

Hercules' New Rosins

Production of new wood rosins of grades M and N is announced by the naval stores department, Hercules Powder. New rosins are unbleached and experiment has shown, it is stated, that they will bleach with heat into the paler shades. General specifications, other than color, of the new M and N wood rosins are very close to those of Hercules I Wood Rosin, which is well known to the trade. A new process developed at the company's Brunswick, Georgia, plant makes possible production of a complete line of wood rosin grades which will extend, upon bleaching, into the palest grades now in demand, it is stated by Hercules authorities.

Wood tar creosote has been examined for its timber preserving qualities in the Forest Research Institute at Dehra Dun, Northern India. It has been found from the toxicity tests that as compared with coal tar creosote the Mysore creosote is rather superior.

Naval Stores Statistics

According to figures compiled by the Bureau of Chemistry and Soils, industrial concerns using turpentine and rosin in their products consumed during the calendar year 1931 a total of 4,343,630 gallons of turpentine and 792,970 barrels of rosin. Data on stocks of turpentine and rosin as of March 31, 1932, the last day of the 1931 producing season, are also shown. Statistics on stocks at the stills, being taken by the Census Bureau in connection with production statistics, are not yet available. These statistics will be made public later by the Bureau of the Census. Distribution of consumption by industries for 1931, 1930 and 1929 is shown in the following table:

Stocks on Hand and En Route as of March 31

	Turpentine (Gallons)		
	1932	*1931*	*1930*
Gum turpentine stills	Data incomplete	Data incomplete	642,429 [1]
Steam dist. plants [2]	291,773	499,331	706,277
Dest. dist. plants	20,615	8,824	45,929
Sulfate wood turp. Plants	12,248	9,957	No data available
Southern primary ports [3]	4,264,938	2,562,911	2,440,806
Eastern dist. points	285,109	329,376	386,472
Central dist. points	721,181	771,241	818,588
Western dist. points	95,593	100,384	85,793
Plants of industrial consumers	871,439	1,130,728	1,247,333
	Rosin (Round 500-lb. bbls.)		
	1932	*1931*	*1930*
Gum turpentine stills	Data incomplete	Data incomplete	87,259 [1]
Steam dist. plants [2]	90,540	125,919	91,498
Dest. dist. plants	.....	.....	.....
Sulfate wood turp. Plants	.....	.....	.....
Southern primary ports [3]	428,199	333,951	193,849
Eastern dist. points	9,550	8,404	13,151
Central dist. points	10,458	10,851	21,349
Western dist. points	1,621	2,700	1,325
Plants of industrial consumers	365,446	250,802	200,963

[1] These figures are those reported by the Bureau of Census.

[2] Figures on steam distillation plants compiled by The Hercules Powder Co., Wilmington, Del.

[3] Stocks at primary ports and distributing points include only those held on the large yards or by dealers and jobbers. They do not cover supplies for retail counter sales only.

Exports and Imports of Turpentine and Rosin

	Turpentine (Gallons)		
	1931–32	*1930–31*	*1929–30*
*Exports [1]	12,690,350	16,755,616	16,940,179
*Imports [2]	169,100	445,522	434,731
	Rosin (Round 500-lb. bbls.)		
	1931–32	*1930–31*	*1929–30*
*Exports [1]	1,119,694	1,304,841	1,365,400
*Imports [2]	1,460	1,542	2,815

[1] Export figures are for twelve-month period ending March 31st.

[2] Import figures are for calendar year ending December 31st.

*Figures compiled from Official Reports of U. S. Department of Commerce and published in Gamble's International Naval Stores Yearbook for 1932-33.

J. C. Nash, Columbia Naval Stores president, sailed recently for Europe.

G. Austin Wharry, G. A. Wharry & Co., N. Y. City brokers, returning from extensive trip through the South reports optimistic feeling in naval stores industry.

General Naval Stores, N. Y. City, appoints Mulcahy & Griffin, 141 Milk st., Boston, New England representative.

Mexican naval stores producers at Durango are advised by the government that they must adopt Hugues (French) turpentine methods. Producers contend that this system is more harmful than the American system.

Daniel M. Flynn

Daniel M. Flynn, 79, well known figure in naval stores factorage for half a century, chairman of the board, Turpentine & Rosin Factors, Inc., died Sept. 8 at his home in Jacksonville. First a practical farmer, he then organized Independent Naval Stores Co., and later the West-Flynn-Harris Co., a well known Savannah and Jacksonville commission house. When Flynn-Harris-Bullard Co. was organized, he became vice-president and it is said that this house for years handled the largest quantities of naval stores business in the South. Two years ago when Pace-Lewis interests merged with Mr. Flynn's firm and the new organization became the Turpentine & Rosin Factors, Inc., Mr. Flynn, while not active, remained as chairman of the board of the new company.

Turpentine shipments from Durango, Mexico amounted to 24,000 gallons in July.

German Imports

Although total imports of rosin and turpentine into Germany declined during the first six months of 1932 compared with receipts during the same period of 1931, American naval stores sales to this market increased. German imports of turpentine in the first half of 1932 amounted to 8,108 metric tons, contrasted with 10,866 tons in corresponding months of 1931. The U. S. provided 73 per cent of the trade, or 5,983 tons, in the current period and only 48 per cent (5,257) tons in the first six months of 1931. Gum rosin imports into Germany totaled 22,692 metric tons in the first half of 1932, as against 24,887 tons in the preceding period. Supplies from U. S. expanded from 16,578 tons to 17,981 tons, representing 66 per cent of the trade in the six months period of 1931 and 79 per cent during the corresponding months of 1932. Rosin receipts from France declined from 5,941 tons to 2,477 tons and Spanish shipments from 1,784 to 1,396 tons.

W. J. Farmer, R. E. Thorpe & Co., Savannah naval stores brokers, and for years connected with the old London-Savannah Naval Stores Co., returns Sept. 28 from England and the continent.

Industrial Consumption of Turpentine and Rosin [1] During the Calendar Years 1929, 1930 and 1931

	Turpentine (Gallons)			*Rosin (Round 500-lb. bbls.)*		
	1931	*1930*	*1929*	*1931*	*1930*	*1929*
Automobiles and wagons	87,072	80,953	100,815	591	3,523	2,797
Chemicals and pharmaceuticals	41,259	70,185	60,474	3,938	5,246	5,332
Foundries and foundry supplies	6,305	27,144	10,136	7,193	17,399	29,349
Linoleum	2,703	2,754	81	21,746	29,458	44,811
Matches	.....	.....	.....	2,453	2,953	3,430
Miscellaneous	40,917	65,556	61,633	2,362	3,752	6204
Oils and greases	54,224	21,776	28 380	29,565	49,828	54,427
Paper and paper size	2,349	1,771	6,159	299,934	341,327	388,310
Paint and varnish	3,444,882	4,089,743	4,630,505	155,592	192,878	283,842
Printing ink	14,562	11,209	14,232	15,164	13,104	15,269
Sealing wax, pitch, insulation and plastics	42,353	70,236	75,280	13,902	26,291	40,892
Shipyards, car shops, etc	46,258	65,520	62,865	74	3,086	790
Shoe polish	555,046	527,838	567,920	587	610	719
Soap	5,700	10,539	4,215	239,869	218,967	228,599
Totals	4,343,630	5,045,224	5,622,695	792,970	908,422	1,104,771

[1] Consumption data are for calendar year. Other data herein given are for the fiscal year of the naval stores industry, ending on March 31. In most industries a few concerns did not report after repeated requests. To cover these, estimates were made to make the figures reported herewith as nearly correct as possible. These estimated quantities are less than 5 per cent of the total.

Oils and Fats

Soybean Producers Meet

American Soybean Association's meeting Sept. 2 and 3 at Washington, featured by address on commercial uses of soybean oil and meal by Whitney H. Eastman, president of the Association.

John P. Gary, associate agronomist of Louisiana State University, Baton Rouge, elected president; C. K. McClellan, agronomist, University of Arkansas, Fayetteville, elected vice-president; and W. E. Ayers, director of Mississippi state experiment station at Stoneville, secretary-treasurer. Next meeting will be held in Baton Rouge, La.

Argentine Flaxseed Control

A bill introduced in Argentine Congress Sept. 14 establishes national flaxseed control board, prohibits trading in flaxseed except by persons previonsly registered and attempts to fix an export price of twelve pesos a quintal, equivalent to 78⅓ cents a bushel. Whenever the exporter pays the farmer less than this price he must pay an export tax equivalent to the difference. Details of every sale and purchase must be reported to the board under penalty of a fine. An unregistered person attempting to trade in flaxseed will be subject to a fien of 100,000 pesos ($25,000).

Under a sudden strengthening of the market duriug September, flaxseed has been selling for abont 70 cents a bushel.

H. W. Galley, manager, oils division, Staley Sales Corp., Decatur, Ill., spends some time in N. Y. City, Philadelphia and Richmond, after attending meeting of soybean interests in Washington, Sept. 2 and 3.

Tung oil exports from Hankow during August amounted to 9,332,000 pounds, of which 7,404,000 pounds were shipped to the U. S. and 1,928,000 pounds to Europe. This compares with total exports of 9,316,000 pounds in July, and 5,808,000 pounds in August, 1931. Stocks of oil on hand at Hankow at the end of August were estimated to be approximately 700 short tons. Market quotations have been converted into U. S. equivalents, and indicate range during the month from the low of $0.039 at the opening to the high of $0.044 at the close. These prices were for processed oil naked, at the Hankow go down, less overhead taxes, packing, coolie hire, insurance and other incidental charges.

Oil Trades Association of New York's banquet is scheduled for Oct. 18 at the Waldorf.

Total consumption of China wood oil in U. S. industries has declined rapidly during the past three years, amounting to 97,474,000 pounds in 1929, 87,092,000 pounds in 1930 and 82,313,000 pounds in 1931, according to Bureau of the Census. Shifts in volume of usage by leading consuming channels can be observed by analyzing consumption by industries during the peak year of activity in 1929 and during 1931 as shown below:

(Quantities in thousands of pounds)

Industry—	1929	1931
Paint and varnish	88,586	72,853
Linoleum and oilcloth	5,963	7,303
Printers' Ink	437	965
Miscellaneous indust.	2,688	1,193
Total	97,474	82,314

American Oil & Grease, Swann-Finch subsidiary, moves Detroit offices to 201 N. Wells st., Chicago. American Oil & Grease will handle sales in mid-western territory for parent company under A. J. Callaghan.

Planters Nut & Chocolate Co.'s president, Amedeo Obici, returning from European trip, announces plans for peanut oil plant at Richmond, Va.

Ed. Woodall, chairman, Tariff Committee, Texas Cottonseed Crushers' Association, takes sharp issue with John B. Gordon, Washington representative, Bureau of Raw Materials for American Vegetable Oils and Fats Industries, on the question of tariff relief for domestic producers of vegetable oils and fats. In a lengthy letter to *The Cotton and Cotton Oil News* (Dallas, Texas, Sept. 17, p 11) he disputes several of the statements made by Mr. Gordon in an article in an earlier number of the same weekly, charging that the Bureau of Raw materials for American Vegetable Oils and Fats Industries is an association of soap manufacturers and other large industrial users of vegetable oils.

Sperm Oil Hearings

Gilbert P. Smith, Cook Swan Oil president, and Frederick Shelton, attorney, representing Strohmeyer & Arpe and Smith & Nichols, importers, testified Sept. 20 before the Tariff Commission favoring a reduction on crude and refined sperm oil and spermaceti wax. John B. Gordon, secretary, Bureau of Raw Materials for American Vegetable Oils and Fats Industries, declared the American industry did not oppose a reduction. He stated that the single American producer was a subsidiary concern of a Canadian company and added that as sperm oil is not in competition with domestic animal oils or fats.

Murray Oil Products is sole U. S. selling agent for cod oils produced by Isaac Spencer, England.

Textile Chemicals

National Oil Products Personnel

Ralph Weschler, National Oil Products treasurer, sails for Europe on the "Albert Ballin." He expects to be away two months. Dr. K. T. Steik, research director, reports engagement of Dr. Julius F. Muller as chemist and bacteriologist, specializing in disinfectant fields. The Company also announces transfer of R. E. Hill, Illinois representative in the farm feeds division, to the home offices at Harrison, N. J. Edson K. Rice becomes mid-western sales manager for the textile oils department. He was formerly with Atlas Refining and previous to that with John Campbell. His headquarters will be in Chicago.

American Association of Textile Chemists & Colorists, N. Y. Section, listened Sept. 23 to D. H. Jackson, Croll-Reynolds Co., on "Vacuum Refrigeration for the Textile Industry" and C. F. Chandler, du Pont, on "Properties of the Acele Yarns in Regard to Dyeing and Finishing."

Recommended Commercial Standard designed to simplify sulfonated oils grading became effective Sept. 1. Standard (explained in detail in Chemical Markets, August, p. 147) accepted by sufficient number in the industry to represent a satisfactory majority. Printed copies will shortly be mailed to all acceptors. Others interested may purchase through Supt. of Documents, Washington, 5 cents per copy.

Jacques Wolf & Co., Passaic, N. J., adds another unit by the purchase of additional property and building at Carlstadt, N. J. Board of directors elect Gerald J. Desmond, sales manager, a director and secretary of the company. He will continue to contact dyers and printers in the East and South.

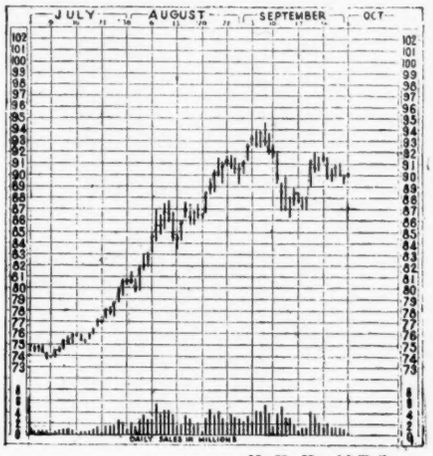
Daughters of the late Thomas J. Clexton, Boston dyestuffs dealer, will continue business at 131 State st., under the name of The Thos. J. Clexton Co.

The Financial Markets

Stock Market Declines Moderately—Chemical Group Makes Good Showing—I. C. I. Directors Increase Interim Dividend—Allied Declares Regular Dividend—Vanadium, A. A. C., and MacAndrews & Forbes Reduce Capitalization—N. Y. Curb Deals in Silica Gel 6½s "Flat"

The stock market in September failed to continue the sensational upward movement initiated early in July and carried through all of August without serious interruption. Such action was not unexpected. General business conditions while gradually improving, did not warrant any further appreciation in the stock market. It is encouraging that the decline, amounting to only three per cent, did not become greater.

Daily Record of Stock Market Trend



—*N. Y. Herald Tribune*

New High—Then Decline

After establishing a new high mark for the upswing in the early part of September, stock prices declined sharply in the second week, canceling nearly 25 per cent of the gains made in the recovery, then rallied abruptly to a level around which they moved irregularly to the end of the month, closing at prices approximately the same as those at the end of August.

Measured by the changes in values of 240 stocks, compiled by *The N. Y. Times* comprising the twenty principal groups listed on the N. Y. Stock Exchange, the depreciation in equities was $422,283,148, or 3 per cent, comparatively small when compared with the gain of $4,041,656,665, or 36 per cent, made in August, and $2,893,432,823 or a 34 per cent enhancement in July. Last year in September, the same number of stocks depreciated $7,188,722,493. The loss in values last month was the smallest for any September in five years.

Declines vs. Advances

Advances were scored in market values in three of the last nine months, while in 1931, the market moved upward in four out of nine months up to September. Since the end of September, 1929, these stocks gained in values in 13 months and declined in 23 months. They are still more than 70 per cent below the values at the end of September three years ago.

The following table shows the net change in points in each group as well as the change in values.

Group and Number of Issues	*September Avr. Net Ch'ge in Points*	*September Change in Values*
Amusements (5)	— 1.000	— $12,264,317
Building equip. (9)	+ .069	+ 8,712,791
Business equip. (4)	— .656	— 11,886,949
Chain stores (14)	— .268	+ 14,615,584
Chemicals (9)	**+ .042**	**+ 53,315,053**
Coppers (15)	— .833	— 58,296,362
Depart. stores (10)	— 1.200	— 658,722
Foods (19)	— .164	— 28,961,683
Leathers (4)	+ .063	+ 239,678
Mail order (3)	+ .958	+ 21,548,901
Motors (15)	+ .683	+ 89,442,421
Motor equip. (7)	+ .411	— 2,108,677
Oils (22)	— 1.165	— 278,099,537
Public utilities (29)	— 1.362	— 139,430,206
Railroads (25)	— 1.940	— 16,680,955
Railroad equip. (8)	— .937	+ 2,791,815
Rubber (6)	— 2.187	— 17,398,548
Steels (13)	— .240	— 25,389,145
Sugars (9)	— 1.153	— 8,975,208
Tobaccos (14)	— .241	— 12,799,082
Aver. and total 240 issues	— .664	— $422,283,148

The chemical group, consisting of nine representative common stocks showed a net gain in value rather than a decline due to the rise in du Pont, Carbide and Commercial Solvents. The net appreciation of $53,315,053 added to the gain of $418,885,698 in July and August leaves only a net loss of $116,866,677 in the chemical group for the year.

The individual gains or losses are given in the following table:

Allied Chemical & Dye	.....	$1,800,966
Comm. Solvents Corp.	$4,427,880	.....
Davison Chem. Co.	.....	1,008,134
Du Dont de Nemours & Co.	41,496,311	.....
Mathieson Alkali Wks.	.....	487,827
Texas Gulf Sulphur	.....	2,222,850
Union Carbide & Carbon	13,832,103	.....
U. S. Ind. Alcohol	.....	560,766
Virginia-Carolina Chem.	.....	360,698
Total	$59,756,294	$6,441,241

Average Price

CHEMICAL MARKETS' Average Price for 15 representative industrial chemical common stocks showed a slight loss. The Price stood as follows on the successive Fridays: Aug. 27, $29.57; Sept. 3, $31.03; Sept. 10, $30.77; Sept. 17, $26.93; Sept. 24, $30.24; Sept. $29.36. On Oct. 2, 1931 the Price stood at $29.79.

Over the Counter Prices

	August 31 Bid	August 31 Asked	September 30 Bid	September 30 Asked
J. T. Baker	8	12	8	12
Dixon	26	32	35	42
Merck, pfd	59	64	67	72
Solid C	1	2	1	2
Young, J. S., pfd.	74	..	81	..

Foreign Markets

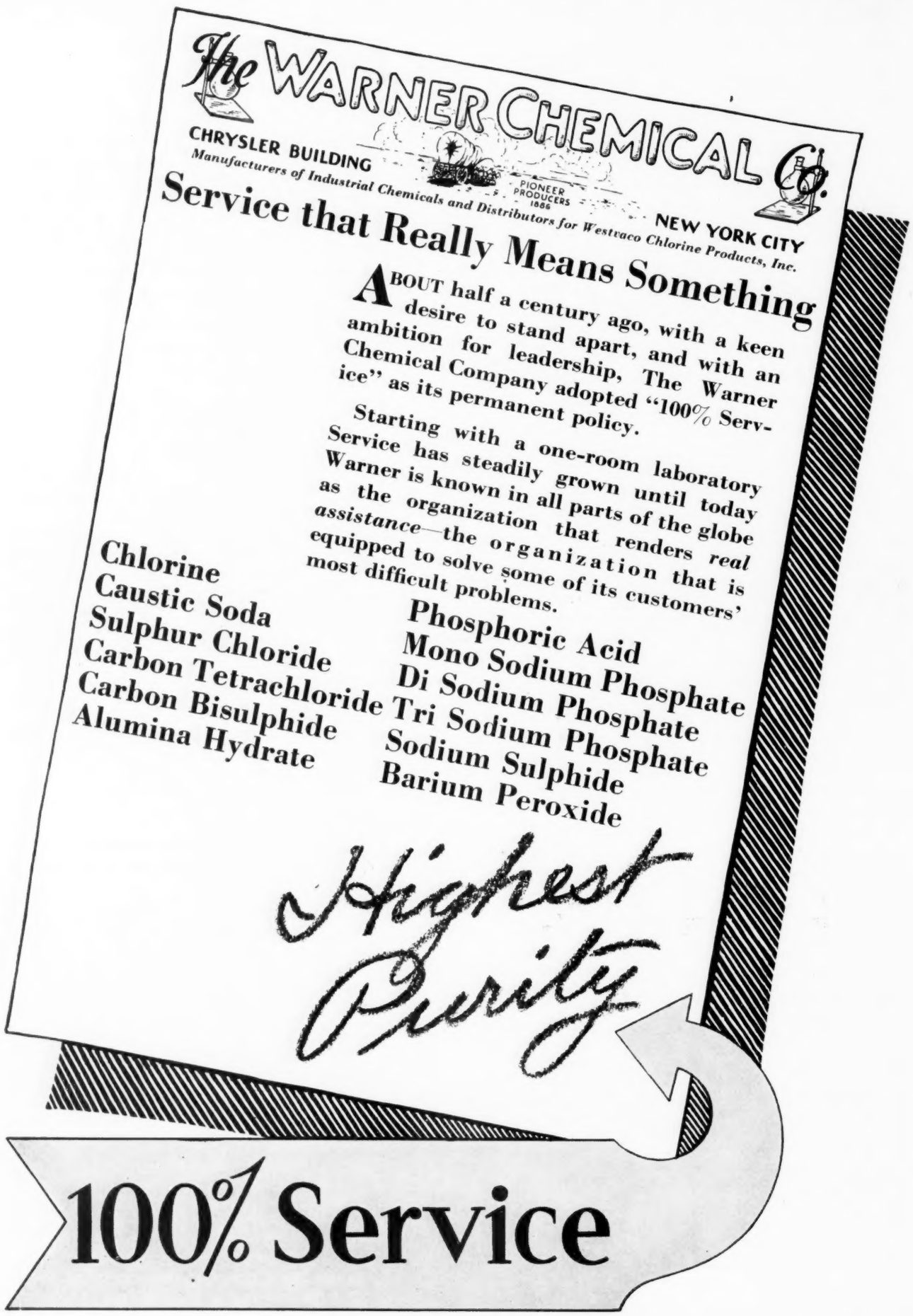
London	**August 31**	**September 30**
British Celanese	9s	8s 6d
Celanese	40s	47s 6d
Courtaulds	£1¾	£1½
Distillers	51s 9d	52s
Imperial Chemical	19s 1½d	21s
Un. Molasses	9s	6s 9d
Paris		
Kuhlmann	530	480
L'Air Liquide	900	....
Berlin		
I. G. Farm	95	98
Milan		
Italgas	....	13½
Montecatini	....	114¼
Luia Viscosa	....	159

Price Trend of Chemical Company Stocks

	Aug. 26	*Sept. 2*	*Sept. 9*	*Sept. 16*	*Sept. 23*	*Sept. 30*	*Net Change*
Allied Chemical	84⅝	86	83	73	82	80	—4⅝
Air Reduction	58⅞	59⅛	58¾	54¼	59¼	57¼*	—1⅝
Anaconda	11¼	14⅜	15½	11¾	14	12⅛	+1⅛
Columbian Carbon	33⅞	36¼	36⅛	29	34¾	34½	+ ½
Com. Sol	10¼	10⅜	12¾	10	12	11¾	+1¼
Du Pont	40½	42¾	42	36½	44	42¾	+2¼
Mathieson	17½	19⅝	18⅜	17	18½	18	+ ½
Monsanto	23⅜	23½	23¼*	23½	25	25⅞	+2½
Stand. N. J	35¼	35¼	35½	31¼	31¾	31⅝	—4⅛
Texas Gulf	24	24½	24⅛	20½	23½	22⅝	—1⅜
U. S. I.	34	34½	31¾	28	33	31½	—2½

*Ex-dividend.

If charity begins at home, certainly government economy does not. Every proposed cut in federal expenses always exempts the services and work in which the proposer is particularly interested. If you would like to confirm this commonplace observation, read the editorial "Crises" in the September *Industrial and Engineering Chemistry*, and compare it with the propaganda for public works gotten out by the Engineering Council. Hear both sides of the same story.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PIONEER PRODUCERS 1886
Manufacturers of Industrial Chemicals and Distributors for Westvaco Chlorine Products, Inc.
Service that Really Means Something
ABOUT half a century ago, with a keen desire to stand apart, and with an ambition for leadership, The Warner Chemical Company adopted "100% Service" as its permanent policy.
Starting with a one-room laboratory Service has steadily grown until today Warner is known in all parts of the globe as the organization that renders real assistance—the organization that is equipped to solve some of its customers' most difficult problems.
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Caustic Soda
Sulphur Chloride
Carbon Tetrachloride
Carbon Bisulphide
Alumina Hydrate
Phosphoric Acid
Mono Sodium Phosphate
Di Sodium Phosphate
Tri Sodium Phosphate
Sodium Sulphide
Barium Peroxide
Highest Purity
100% Service

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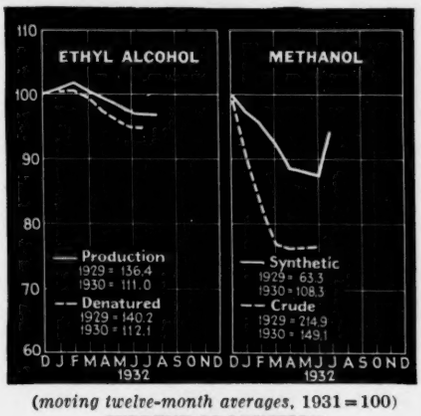
SOLVENT NEWS

OCTOBER ★ A Monthly Series of Articles for Chemists and Executives of the Solvent-Consuming Industries ★ 1932

SOLVENT DELIVERIES SHOW INCREASE IN VOLUME

A better than seasonal gain is reported for deliveries of solvents to some branches of consuming industries. Rayon and textile mills have maintained a high rate of operations and have taken on correspondingly larger amounts of raw materials. A large manufacturer of chemicals attributes a gain of 24% in sales last month largely to increased textile production. Other consumers while showing more interest in the market have not increased commitments in a large way.

Production naturally has been speeded up somewhat as a result of more active call for materials. Reserve stocks, with few exceptions, are not large and the general price tone is firm.



(moving twelve-month averages, 1931 = 100)

CURRENT PRODUCTION

		1932	1931
ETHYL ALCOHOL			
Pure	Jan.-August	89,413	94,388
1000 proof	July	11,908	11,975
gallons	August	12,200	12,363
Denatured	Jan.-July	34,205	38,045
1000 wine	June	5,300	6,195
gallons	July	6,203	5,962
METHANOL			
Crude	Jan.-July	1,523	2,378
1000	June	136	182
gallons	July	111	154
Synthetic	Jan.-July	4,396	4,826
1000	June	712	654
gallons	July	794	438

In the industrial alcohol market a switch from completely denatured alcohol to S. D. No. 1 is becoming quite general due to higher prices in effect at the present time on all completely denatured alcohols as compared with prices for S. D. No. 1.

DUPONT DEVELOPS SOLVENT-RESISTANT SYNTHETIC RUBBER—NEW DRYING OIL

Completely insoluble films are claimed to result from the drying of DuPont's new synthetic drying oil, S-D-O Base—a polymerized form of divinyl acetylene. Various solutions are now available as well as paints for coating practically all surfaces for resistance to solvents, chemicals, and water penetration.

An exceedingly tough synthetic rubber, "DuPrene," has also been derived from the same acetylene base by partial polymerization. Although it may be compounded to be worked on ordinary rubber machinery, the resultant products are said to be tough and highly resistant to solvents and oils, making it suitable for hose, gasket, and packing uses.

* * *

A Joint Session of the National Paint, Oil and Varnish Association and the American Paint and Varnish Manufacturers Association will be held in Washington, D. C., in the week of November 14th. The Federation of Paint and Varnish Production Clubs will also meet November 11-12, at the Mayflower Hotel. The latter organization plans to conduct an exhibit of materials and equipment at the same time.

FAVORABLE OUTLOOK FOR PAINT AND LACQUER; CENSUS CONFIRMS REPORT OF RELATIVE GAINS

NEW FIGURES SHOW INDUSTRY SURPASSED ACTIVITY OF MAJOR CONSUMING MARKETS

The chief significance of the new government census of Paints and Varnishes is the fact that anticipated losses in these industries have been considerably less than the corresponding decline in demand from their largest consuming industries — building and automotive.

A decline of 38% in paint and varnish production was reported for the two-year period, 1929-31. In this same period, building construction fell off 46%, and automotive production dropped 55%.

While the 1929 Census reported only sales, and the last report is based on actual production, it is believed that price declines in this period more than correct this variation. Moreover, where a volume comparison is made, as for mixed paints, varnishes, lacquers, and stains, the decline was less than 30%.

1932 Production

Comparative performances in 1932 have been even more encouraging. The *Solvent News* index of paint, varnish, and lacquer production shows a decline of 27% the first six months of 1932 against 1931, while construction dropped 62%, and automobile production 44% in the same period.

These latter reports and the Census analysis accurately measure the industry's loss. While the extent of declines is considerable, the relatively better showing made in comparison with the two chief markets emphasizes the industry's success in finding other markets to replace these leaders.

The paint and lacquer industry is deservedly fortunate in supplementing these declining "backbone" markets by foresighted development of smaller specialty applications, and intensifying its promotional work in the field of repainting and maintenance. This broadening of markets for finishes is certain to speed-up recovery.

Encouraging Prospects

Competent observers look for a substantial turn in both construction and automotive production in the next quarter. Stocks of cars on September 1 were estimated to be 39% below a year ago. October production is expected to reach a new low for the year, but at least three companies will be in production on 1933 models by the end of the month, and the balance in November. Substantial increases are looked for in the next two months.

With returning demand from these markets, reinforced by the relative gains in new fields since 1929, the paint, varnish, and lacquer industries can justifiably anticipate a faster-than-normal recovery, and continued expansion from broader foundations.

* * *

Technical Research will be the main topic of interest at the annual convention of the American Pharmaceutical Manufacturers Association, October 26th, at the Detroit Athletic Club.

* * *

Benzol shipment charge of 1¢ per gallon, in carloads for interstate shipment in central territory, has been canceled by the I.C.C.

DISPLAY OF CHEMICAL PRODUCTS DRAMATIZES USES OF ALCOHOL

This large window display of products which employ industrial alcohol in their manufacture has brought home to thousands some conception of the important part that basic chemicals play in their lives. It is the third of a recent series of educational exhibits sponsored by the U. S. Industrial Alcohol Co. in the Forty-second Street window of the giant Lincoln Building, opposite the Grand Central Terminal in New York City.

The most striking feature of the display is the extraordinary variety of familiar personal and household products in which industrial alcohol is used. This is vividly brought out by the use of the two revolving tiers of display shelves. Studies have shown that even this type of simple motion increases the attention of passers-by by 200% or more.

Among the articles displayed are actual commercial packages or samples of shoes, glass, rayon, polishes, flavoring extracts, hats, lacquers, cosmetics, drugs, "canned heat," perfumes, and anti-freeze. The center panel of the display is a detailed chart illustrating the various steps in the production of industrial alcohol. Chemists as well as consumers have commended the educational value of this public exhibit.

OCTOBER ★ **SOLVENT NEWS** ★ 1932

SOLVENTS FOUND MOST USEFUL IN PAINT REMOVAL PRACTICE

The problem of paint, varnish, and lacquer film removal is a general one to industrial production and maintenance operations. Study of methods found to be most effective and economical shows four in constant use: *abrasion* with sandpaper, steel wool, etc., *burning* by torch, *alkali* treatment, and *solvent* action.

Abrasion by machine is better for larger jobs. Burning by torch is suitable for paint removal from limited flat areas, but may scar underlying surfaces and entails fire hazards. Strong alkali solutions quite readily remove paint and varnish, but frequently loosen veneers and introduce undesirable water into wood fibres.

There is nothing better for either paint, varnish, or enamel than scientifically formulated solvent removers. They remove quickly, need no heavy or expensive equipment, do not affect the human skin, and are moderate in price.

Quite a choice of solvents is available in this field—and selection will be determined by primary cost and solvent activity. *Ethyl Acetate* and *Ansol PR* are excellent and long-recognized components of paint removers. Based on performance, they will be found most economical in producing low cost and efficient removers. The action is swift, and paint films are effectively disintegrated. Another advantage is the mild odor—differing from the penetrating smell of removers containing other type solvents.

1931 PLASTICS VALUE $16,133,000

Latest census release credits the entire molded products industry with $26,051,000 1931 output. Producers of molded phenolic resins and similar plastics accounted for 60% of the total. This is the first government report for the industry in this form.

SOLVENT PRICE TREND

Lower prices for gasoline and refined oil products have been extended throughout the list of petroleum solvents and diluents. With this exception, quotations for solvents have displayed a firm price tone. Reserve stocks are reported to be low, this being especially true for some of the coal tar solvents, adding to price firmness.

The index number for the month under the influence of petroleum solvents dropped to 98.30 as compared with 98.32 for the preceding month. This index is based upon first-of-the-month prices of 36 industrial solvents of all types, as reported by the *Oil, Paint and Drug Reporter.*

TECHNICAL DEVELOPMENTS

An Aluminum Finish which dries by evaporation of solvents, like lacquers, in from 15 minutes to 4 days, is being marketed in factory-mixed form. It is said to resist water, ordinary acids and alkalis, and ultra-violet light.

* * *

Dehydration of low-boiling alcohols by means of alkali salts of higher boiling alcohols has been proposed. Absolute alcohol is increasingly in demand for its higher solvent-power, effect on blushing resistance, and mixed fuel uses. At present, distillation from ternary alcohol-benzene-water mixtures is the only economical large-scale method.

* * *

Nitrocellulose Paint Primers are the subject of active research work by German chemists. The drastic reductions in drying time of many modern finishes and the stepping-up of the pace of industrial painting have created a natural demand for fast-drying primers. One of the new primers developed, "Kronengrund," is said to close wood pores immediately, since the size of the nitrocellulose molecules is too large for absorption in well-planed wood. Another interesting primer employs a rubber substitute in place of metallic compounds to give the oil base the desirable pore-closing properties.

* * *

The Use of Rubber in Lacquers is reviewed in a current article in *Farbe und Lack.* The preparation of cold rubber solutions, and the effect of certain solvents, plasticizers, and pigments on properties of the film is described.

* * *

Alcohol-Synthetic Gasoline Fuel has been put on the market by a German I. G. Corporation, containing 22% alcohol. The compulsory alcohol content of motor fuels has already been raised to 10%.

* * *

Sodium Ethyl Acetoacetate, versatile intermediate, may now be processed to a purity of 70-75%.

* * *

Protective Coating for Petroleum Tanks is available as an elastic, lacquer-like material, applicable to the inside of any receptacle or tank by spray or brush. It is said to be rust inhibitive and insoluble in all hydrocarbons.

* * *

Nitrocellulose Solutions for Paper Coating have been coming into wide use. It has been discovered that diamyl phthalate is a superior plasticizer for formulations requiring substantial quantities of plasticizer. This high boiling ester will not make films sticky or "tacky," even in relatively large amounts.

* * *

Benzine-Soluble Soaps for dry-cleaning have been extensively investigated by British Cleaners. Preliminary results are available in the *Journal of the Society of Dyers and Colourists.*

* * *

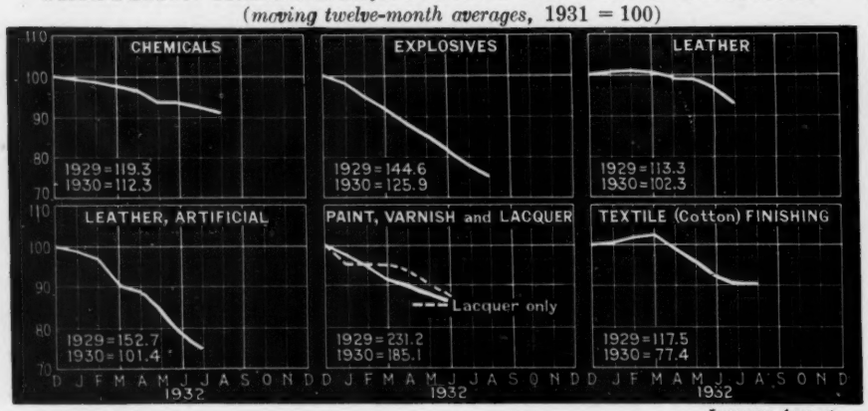
A Preservative for Rubber belting and equipment during periods of shutdown is recommended by engineers of The B. F. Goodrich Company, after an exhaustive study. They recommend that belting and similar products be stored in a dark cool place at reasonable humidity. The following solution may be quickly applied by brush, one gallon to about 300 square feet: 1 quart shellac, 1 pint alcohol, 1½ quarts household ammonia, 3 quarts water.

* * *

A New Plastic derived from wood pulp is said to be stronger than pyroxylin plastics, although similar to celluloid.

PRODUCTION TRENDS in major SOLVENT-CONSUMING INDUSTRIES

(moving twelve-month averages, 1931 = 100)



Production in Industry	*August*	*July*	*January-August 1932*	*January-August 1931*
CHEMICALS: index of production (1931 = 100)	84.8	88.3	88.5	100.2
EXPLOSIVES: 1000 lb	18,340	12,728	132,975	208,425
LEATHER: index of production (1931 = 100)	———	82.9	93.6*	103.5*
LEATHER, ARTIFICIAL: pyroxylin spread, 1000 lb.	———	1,474	14,688*	24,645*
PAINT, VARNISH, and LACQUER: sales ($1000)	———	———	$118,620**	$161,845**
LACQUERS, only 1000 gal	(quarterly reports)		9,102**	12,513**
TEXTILE (Cotton) FINISHING: 1000 yd	64,480	37,404	497,411	566,409

*January-July **January-June

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INDUSTRIAL CHEMICAL CO., INC.

WORLD'S LARGEST PRODUCERS OF ALCOHOL DERIVED SOLVENTS

ALCOHOLS
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Ansol
Butyl Alcohol
Ethyl Alcohol
Anhydrous—Pure and Denatured
Commercial—Pure and Denatured
Fusel Oil—Crude and Refined
Methanol
Secondary Amyl Alcohol
Secondary Butyl Alcohol
Solox

ESTER SOLVENTS
Acetic Ether
Amyl Acetate
Butyl Acetate
Ethylene Glycol Monoethylether Acetate
Diatol
Diethyl Carbonate
Estersol
Ethyl Acetate
Ethyl Lactate
Secondary Amyl Acetate
Secondary Butyl Acetate

ETHER
Ether, Ethyl—USP. and Absolute

PLASTICIZERS
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Dibutyl Phthalate
Diethyl Phthalate
Dimethyl Phthalate

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Cotton Solutions

CELLULOSE ACETATE
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Offers Rights

American Home Products is offering stockholders right to subscribe at $37.50 a share to 61,100 shares of stock, in the ratio of one new share for each 10 shares held. There are outstanding 611,000 shares of stock.

Proceeds of $2,291,250 will be used in payment of $1,500,000 of notes payable incurred in connection with the acquisition for cash in 1931 of John Wyeth & Brother, Inc., and the balance for general corporate purposes. Stockholders of record Oct. 11 are given right to subscribe, which right expires Oct. 31. Stock is currently selling for $40 a share, making the rights worth 22.7 cents each.

N. Y. Curb received notice that principal and interest due Oct. 1 on Silica Gel Corp. five-year 6½ per cent gold notes are not being paid, and the committee on securities has ruled that until further notice the notes shall be dealt in "flat" and to be a good delivery must carry the Oct. 1, 1932 coupon.

I. C. I. directors after reviewing net income for the six months ended June 30, decided to declare an interim dividend of 2½ per cent on the £43,000,000 of ordinary capital. Last year an interim payment of 1½ per cent was made. Following the dividend announcement the £1 ordinary shares of the company were quoted at about 21s., a rise of over 1s. The price of these shares has shown a tendency to rise for some time past. Until quite recently they were around 16s. to 17s. During the dark days of last year they fell to as low as 10s. The 7 per cent preference shares are now quoted at about 25s., and the 10s. deferred at about 6s.

Three Year Stock Trend

Wall Street dates the present depression from Sept. 19, 1929, when stock averages reached their historic high point. The third anniversary finds a stronger tone in financial circles than at this season since 1928. In 1929, 1930, and 1931, the last fortnight of September brought wholesale liquidation of securities which lasted several weeks with only minor interruptions.

The following compilation shows the trend of a number of important stocks of chemical companies or companies closely allied to the chemical industry since 1929.

Dividends and Dates

Name	Div.	Stock Record	Payable
Abbott Lab.	$ .50	Sept. 21	Oct. 1
Air Reduction	.75	Sept. 30	Oct. 15
Allied Chem., pf	$1.75	Sept. 9	Oct. 1
Canadian Industries 7% cum pt pf	$1.75	Sept. 30	Oct. 15
Com. Solvents	.30	Nov. 21	Dec. 31
Devoe & Raynolds, 1st pf	$1.75	Sept. 20	Oct. 1
Devoe & Raynolds, 2nd pf	$1.75	Sept. 20	Oct. 1
Du Pont, deb.	$2.00	Sept. 23	Oct. 1
Eastman Kodak	.75	Sept. 3	Oct. 1
East. Kodak, pf	$1.50	Sept. 3	Oct. 1
Glidden, pr pf	$1.75	Sept. 16	Oct. 1
Hercules Powder	.37½	Sept. 13	Sept. 24
Heyden Chem., pf	$1.75	Sept. 22	Oct. 1
Industrial Rayon	.50	Sept. 19	Oct. 1
Int'l Nickel, pf	$1.75	Oct. 3	Nov. 1
Koppers Gas & Coke pf	.50	Sept. 10	Oct. 1
MacAndrews & Forbes	.25	Sept. 30	Oct. 15
Mathieson Alkali	.37½	Sept. 12	Oct. 1
Mathieson Alkali, pf	$1.75	Sept. 12	Oct. 1
Merck Corp., pf	$2.00	Sept. 17	Oct. 1
Merck Corp., pf	$2.00	Dec. 17	Jan. 2
Monroe Chem., pf	.87½	Sept. 15	Oct. 1
Monsanto Chem.	.31¼	Sept. 10	Oct. 1
Nat'l Distillers, pf	.62½	Sept. 21	Oct. 1
Nat'l Lead	$1.25	Sept. 16	Sept. 30
Nat'l Lead, pf B	$1.50	Oct. 21	Nov. 1
Penn Salt	.75	Sept. 30	Oct. 15
Pittsburgh Plate Glass	.25	Sept. 10	Oct. 1
P & G 8% pf	$1.50	Sept. 30	Oct. 15
Tubize-Chat. Corp., pf	$1.75	Sept. 20	Oct. 1
United Dyewood, pf	$1.75	Sept. 19	Oct. 1
Westvaco Chlorine, pf	$1.75	Sept. 15	Oct. 1

Dividend Action

Allied Chemical declared regular quarterly dividend of $1.50 on common stock, payable Nov. 1 to stock of record Oct. 11.

J. S. Young Co. declared quarterly dividend of $1.50 per share on common stock, par $100, payable Oct. 1 to holders of record Sept. 23. Quarterly distributions of $2.50 per share were previously made on this issue.

California Ink Co. directors on Sept. 13 voted to terminate distinction between class A and B stock as to dividends and preference, effective on Oct. 1.

American Agricultural Chemical stockholders on Sept. 21 voted to decrease authorized capital stock (no par value) from 2,000,000 shares to 500,000 shares. At the same meeting, the following directors elected to hold office during the current corporate year: J. Howard Ardrey, Horace Bowker, Geo C. Clark, John Foster Dulles, Charles Hayden, George C. Lee, George A. Powers and Philip Stockton.

Corn Products Refining declared regular quarterly dividends of 75 cents on common, payable Oct. 20 to stock of record Oct. 3, and $1.75 on the preferred, payable Oct. 15 to stock of record Oct. 3.

U. S. Smelting & Refining declared regular quarterly dividends of 25 cents on common and 87½ cents on preferred stocks, both payable Oct. 15 to stock of record Oct. 3.

Liquid Carbonic omited quarterly dividend of 25 cents on common stock due at this time.

National Distillers Products omited quarterly dividend of 50 cents on common stock due at this time.

Air Reduction directors Sept. 14 declared usual quarterly dividend of 75 cents per share, payable Oct. 15 to holders of record Sept. 30, but failed to declare extra disbursement normally payable at this time of the year. On Oct. 15, 1929, 1930 and 1931, extra distributions of $1.50 each were made.

Devoe & Raynolds directors at an adjourned meeting held on Sept. 8 declared usual quarterly dividends of 1¾ per cent on the 7 per cent cum. 1st and 2d pref. stocks, par $100, payable Oct. 1 to holders of record Sept. 20.

Celanese Corp. of America declared dividend of 87½ cents per share on the 7 per cent cumulative series prior preferred stock of the company, payable Oct. 1, to holders of said stock of record on the books of the company at the close of business Sept. 17.

Capital Reductions

Vanadium stockholders at the annual meeting held on Sept. 12 approved resolution reducing capital as represented by 378,367 1-3 shares by $3,938,002, which amount is to be charged to capital surplus.

President Alfred A. Corey, Jr., reports there has been no pick-up in business of the company, although there had been some inquiries from steel companies asking if Vanadium were prepared to ship promptly in the event orders were placed.

N. Y. Stock Exchange received notice from MacAndrews & Forbes of proposed reduction in authorized preferred stock to 32,385 shares, from 40,000 and change in authorized common to 536,104 shares of $10 par, from 600,000 shares of no par value, each present share of common stock to be exchangeable for one new share.

Bankers Trust, registrar for the preferred and common stocks, American Zinc, Lead & Smelting, accepts and redelivers certificates to be transferred at the company's office at 331 Madison ave., N. Y. City.

	Closing Prices				Yields Per Cent	
	Sept. 19, 1929	Sept. 19, 1930	Sept. 19, 1931	Sept. 23, 1932	High 1929	Sept. 23, 1932
Air Reduction	$214¾	$118½	$69¾	$61	1.34	4.92
Allied Chemical & Dye	337	263	92	82	1.69	7.32
American Smelting & Refining	121	64¼	22½	20¼	2.72	....
Atlantic Refining	63½	32	12½	17¼	1.28	5.80
Corn Products	115	87¾	48¾	53	2.37	5.66
Eastman Kodak	203½	209	116	58	1.89	5.17
National Lead	185	128½	93	†83	2.38	6.02
St. Joseph Lead	68¾	37	12½	12½	2.13	....
Standard Oil of California	74¾	59¾	33½	26¼	3.05	7.66
Standard Oil of New Jersey	76¾	67½	33¼	31½	1.20	6.30
Union Carbide & Carbon	133	73	42	28¼	2.27	4.27

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SALES OFFICE: TACOMA, WASH.

HOOKER CHEMICALS

LIQUID CHLORINE · CAUSTIC SODA · ALUMINUM CHLORIDE · BLEACHING POWDER · FERRIC CHLORIDE · FERROUS CHLORIDE · MURIATIC ACID · SULPHUR MONOCHLORIDE · SULPHUR DICHLORIDE · ACETYL CHLORIDE · BENZAL CHLORIDE · BENZO TRICHLORIDE · BENZOATE OF SODA · BENZOIC ACID · BENZOYL CHLORIDE · BENZYL CHLORIDE · MONOCHLORBENZENE · PROPIONYL CHLORIDE · PARADICHLORBENZENE · PARA NITROBENZOYL CHLORIDE · ALPHA CHLORNAPTHALENE · BENZYL ALCOHOL · SALT · ORTHODICHLORBENZENE · TRICHLORBENZENE · SULPHURYL CHLORIDE · THIONYL CHLORIDE · AMMONIUM BENZOATE · ANTIMONY TRICHLORIDE · ARSENIC TRICHLORIDE · HEXACHLORBENZENE · MONOCHLOR-TOLUENE · TETRACHLORBENZENE

2039

Company Reports

International Agricultural's Loss $1,247,531

International Agricultural and affiliated companies for year ended June 30, shows loss of $1,247,531 after interest, depreciation, depletion and provision of $450,000 for bad and doubtful accounts receivable, but before surplus credit adjustments.

After deducting profit of $199,761 on bonds purchased, and $200,000 reinstatement, in part, of investment in Kaliwerke Sollstedt Gewerkschaft previously written off, the net loss for the year, carried to surplus, was $847,770. For year ended June 30, 1931, net profit including $4,353 profit on bonds purchased, was $60,677, equal to 60 cents a share on 100,000 shares of 7% prior preference stock.

Current assets as of June 30, 1932, including $748,481 cash, amounted to $8,360,611 and current liabilities were $1,166,526, comparing with cash of $1,330,992, current assets of $10,611,808 and current liabilities of $1,459,310 on June 30, 1931.

Consolidated income account for year ended June 30, compares as follows:

	1932	*1931*	*1930*	*1929*
Gross profit	$1,441,895	$2,850,125	$4,382,682	$3,711,480
Expenses	1,395,943	1,897,492	1,836,925	1,775,855
Oper profit	$45,952	$952,633	$2,545,757	$1,935,595
Other income	43,756	84,552	121,453	131,312
Total income	$89,708	$1,037,185	$2,667,210	$2,066,907
Interest	428,527	448,498	469,713	492,304
Depr & depl	458,712	532,363	604,323	520,327
Prov for bad accts	450,000	.....	.....	.....
Loss	$1,247,531	‡$56,324	‡$1,593,174	‡$1,054,276
Prof bds purch	199,761	4,353	68,002	62,341
°Reinstatement of invest	200,000	.....	.....	.....
Loss	$847,770	‡$60,677	‡$1,661,176	‡$1,116,617
Federal taxes	.....	.....	135,000	.....
Net loss	$847,770	‡$60,677	‡$1,526,176	‡$1,116,617
*Pr pref divs	.....	525,000	525,000	700,000
Deficit	$847,770	$464,323	†$1,001,176	†$416,617

*In 1931, 5¼%; 1930, 5¼%; 1929, 7%. †Surplus. ‡Profit. °Reinstatement, in part, of investment in Kaliwerke Sollistedt Gewerkschaft previously written off.

U. S. Smelting Earns $1,163,596

U. S. Smelting & Refining reports for eight months ended Aug. 31, consolidated net profit of $1,163,596, after interest, depreciation, depletion, amortization, etc., equivalent, after dividend requirements on 7% preferred stock, to 9 cents a share (par $50) on 540,527 average shares of common stock. This compares with $1,241,982, or 19 cents a share on 554,962 common shares, for eight months ended Aug. 31, 1931.

Consolidated income account for eight months ended Aug. 31, compares as follows:

	1932	*1931*	*1930*	*1929*
Prof aft int & tax	$2,664,940	$2,667,532	$4,123,443	$4,419,964
Depr. depl & amort	1,501,344	1,425,550	1,841,338	1,373,455
Net profit	$1,163,596	$1,241,982	$2,282,105	$3,046,509
Pfd divs	1,111,247	1,134,817	1,134,817	1,134,817
Surp for com	$52,349	$107,165	$1,147,288	$1,911,692

B. T. Babbitt, Inc., and subsidiaries for the year ended Dec. 31, reports net income after Federal taxes and other charges, $971,775, equal to $10.98 a share on 88,500 common shares, against $836,649, or $9.45 a share in 1930.

McKesson & Robbins, Inc., and subsidiaries for six months ended June 30, shows net profit of $45,979 including $44,547 excess provision for federal taxes of prior periods less current provision for federal and foreign income taxes, and after depreciation, interest, subsidiary dividends, etc. This is equivalent to 10 cents a share on 428,045 shares (par $50) of 7% convertible preference stock, excluding shares held in treasury, and compares with net income in first half of 1931, of $1,300,380, equal after dividend requirements on 7% preference stock, to 51 cents a share on 1,074,734 no-par shares of common stock, excluding treasury shares.

V.-C. Report Reflects Fertilizer Conditions

Virginia-Carolina Chemical and subsidiaries for year ended June 30, 1932, shows net loss of $783,509 after depreciation, depletion, provision for doubtful accounts and taxes, comparing with net loss of $369,606 in preceding fiscal year.

Current assets as of June 30, including $6,402,640 cash and U. S. treasury notes, amounted to $16,383,348 while current liabilities were $138,558. On June 30, 1931, cash amounted to $7,056,072, current assets totaled $18,594,496 and current liabilities were $259,147.

Consolidated income account for year ended June 30, 1932, compares as follows:

	1932	*1931*	*1930*	*1929*
*Gross	$1,020,233	$1,979,656	$3,925,182	$3,925,840
Other income	386,186	440,903	696,289	629,688
Total income	$1,406,419	$2,420,559	$4,621,471	$4,555,528
†Gen exp. etc	1,661,631	2,196,265	2,283,268	2,130,431
Depreciation	528,297	563,900	831,200	809,596
Fed tax	.....	30,000	100,000	100,000
Net loss	$783,509	$369,606	‡$1,407,003	‡$1,515,501
Pr pfd divs	371,700	798,000	844,725	863,450
Pt pfd divs	.....	.....	426,111	639,167
Deficit	$1,155,209	$1,167,606	°$136,167	°$12,884

*After manufacturing expenses and depletion of mines. †Includes provision for doubtful accounts, etc. ‡Profit. °Surplus.

United Dyewood Shows Loss

United Dyewood and subsidiaries report for six months ended June 30, net loss of $105,722 after depreciation, federal taxes and other charges. This compares with net profit of $86,564, equivalent after dividends on subsidiary shares, to $2 a share (par $100) on 38,460 shares of 7% preferred stock in first half of 1931.

The figures for first half of this year include income accounts of foreign subsidiaries at rates of foreign exchange prevailing June 30, but before revaluation of net foreign assets at current rates of exchange.

Consolidated balance sheet, as of June 30, shows total assets of $21,565,619, comparing with $25,023,970 on June 30, 1931, and surplus of $2,609,512, against $3,350,330. Current assets, as of June 30, last including $384,639 cash and certificates of deposit, amounted to $4,256,744 and current liabilities were $648,547. This compares with cash and certificates of deposit of $410,946, current assets of $5,145,499 and current liabilities of $1,178,720 on June 30, of previous year. Capital stock outstanding on June 30, last, consisted of 36,140 shares (par $100) of 7% preferred and 139,183 shares (par $100) on common.

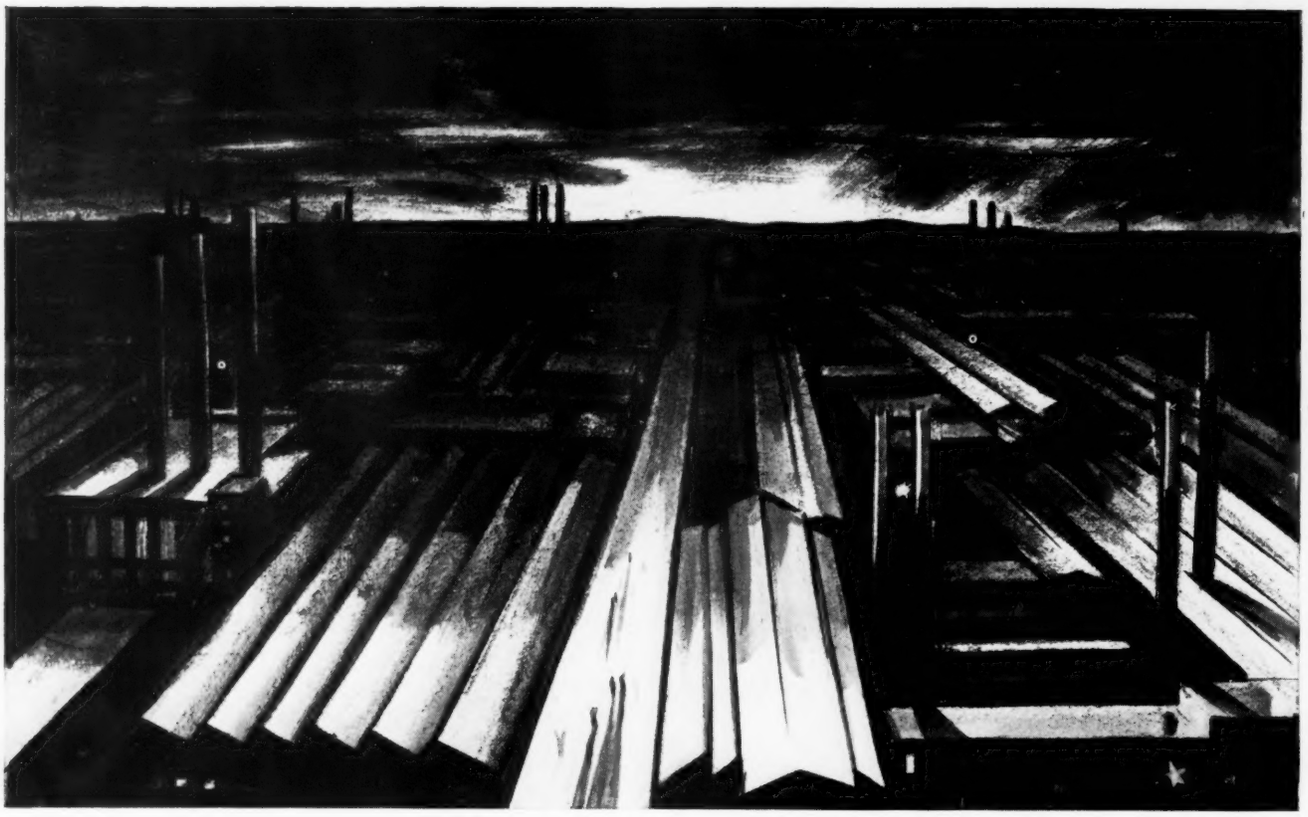
Consolidated income account for six months ended June 30, compares as follows:

	1932	*1931*	*1930*	*1929*
Loss from oper	$44,178	†$170,163	†$227,823	†$322,315
Oth inc (net)	34,392	34,579	38,222	40,121
Loss	$9,786	†$204,742	†$266,045	†$362,436
Depreciation	42,542	56,949	67,217	63,344
Fed'l tax, etc	33,706	44,079	29,399	65,809
Miscel charges	15,932	17,150	27,168	27,919
Gen'l res	.....	.....	.....	17,497
Min interest	3,756	.....	.....	.....
Net loss	$105,722	†$86,564	†$142,261	†$187,867
Subsid pfd divs	.....	9,399	792	11,747
Pfd dividends	127,277	135,240	138,250	138,250
Deficit	$232,999	$58,075	*$3,219	*$37,870

*Surplus. †Profit.

Penn. Salt Nets $2.42 a Share

Penn. Salt reports for year ended June 30, consolidated net income of $363,147 after depreciation, depletion, development and research reserve and federal taxes, equivalent to $2.42 a share (par $50) on 150,000 shares of stock. This compares with $514,129 or $3.43 a share in preceding fiscal year. Consolidated balance sheet as of June 30, shows total assets of $14,739,596, comparing with $15,163,147 on June 30, 1931, and surplus and undivided profits of $6,424,888 against $6,522,987. Current assets amounted to $4,218,901 and current liabilities were $564,260, comparing with $4,360,008 and $855,073, respectively, on June 30, 1931. Cash and marketable securities totaled $900,073 against $1,251,612.



DAWN

THROUGH the dark night from which American Industry is now emerging, Chemical Research has been preparing for the Dawn. Its work has contributed materially to the hastening of the new era now beginning. A new era of better methods of production and improved commodities, expanding markets and a revival of business and agriculture.

Are you ready? Swann Research can help you bridge Time in the improvement of your products. Swann production divisions stand ready to supply materials more closely adapted to your needs. The recent expansion of our contact organization has placed a Swann trained man near you to serve you without lost motion. A call to our nearest District Office will bring him.

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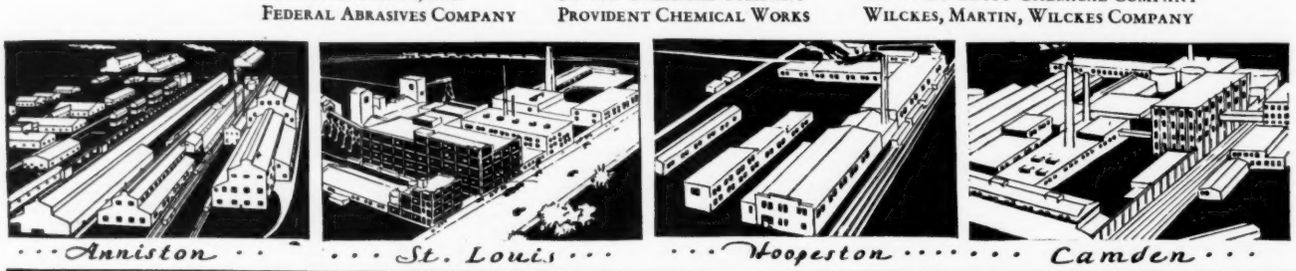

The Industry's Securities

1932 Sept. Last	1932 High	1932 Low	1931 High	1931 Low	Sales In Sept.	Sales During 1932	Stocks	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1931	Earnings $-per share-$ 1930
NEW YORK STOCK EXCHANGE												
59	63½	52¼	63½†	30⅞	109⅜	47⅜	122,400	957,300	Air Reduction	No	841,288	$3.00	4.54	6.32
79⅞	88¼	71	88¼†	42⅛	182⅜	64	486,900	4,054,400	Allied Chem. & Dye	No	2,401,000	6.00	6.74	9.77
118	119½	114⅜	119	96½	133½	100	1,200	21,300	7% cum. pfd.	100	393,000	7.00		
10½	15½	9⅜	15½†	3½	29⅜	5½	15,400	51,100	Amer. Agric. Chem.	100	333,000		Yr. Je. '30	Nil
25¾	27	18⅜	27†	11	14⅜	5	107,700	517,900	Amer. Com. Alc. (new)	20	375,000			d1.27
....	....	....	½	⅛	4½	⅛		76,200	Amer. Solvents & Chem.	No	503,000			d2.86
13¼	15½	13¼	15½†	7	18	10½	4,500	36,300	Archer Dan. Midland	No	550,000	1.00	Yr. Aug. 30	1.68
....	17⅝	12	25½	7½	54	18	5,100	31,900	Atlas Powder Co.	No	261,438		.59	2.67
68	75	67	79½	45½	99⅞	77¼	340	4,980	6% cum. pfd.	100	96,000	6.00		
33¾	39½	26	41⅞	13½	111⅛	32	143,100	720,000	Columbian Carbon	No	538,420	2.00	3.02	5.04
11¼	13¾	9½	13½†	3½	21½	6⅝	498,900	1,615,000	Comm. Solvents	No	2,530,000	.60	.83	1.07
52½	55⅝	44⅛	55⅛†	24½	86⅝	36½	144,400	755,400	Corn Products	25	2,530,000	3.00	3.54	4.82
132	135	125⅛	135†	99½	152¼	116	530	7,160	7% cum. pfd.	100	250,000	7.00		
5	9½	4½	9¼†	1	23	3½	73,700	176,200	Davison Chem. Co.	No	504,000		Yr. Je. '30	4.00
42⅞	46½	34¼	59⅛†	22	107	50¾	1,046,700	5,777,964	DuPont de Nemours	20	11,008,512	2.00	4.29	4.67
103	103⅛	101	105⅛	80⅞	185⅜	91¼	2,300	44,000	6% cum. deb.	100	1,098,831	6.00		
54⅞	64⅛	49¼	87⅜	35¼	185⅜	77	127,000	1,407,000	Eastman Kodak	No	2,261,000	3.00	5.78	8.84
112½	112½	112	119⅜	99	135	103	130	1,955	6% cum. pfd.	100	62,000	6.00		
25⅛	26⅞	21½	26⅜†	10	43¼	13¼	109,500	438,425	Freeport Texas Co.	No	730,000	2.00	3.26	w4.77
26½	29½	24	29¼†	13⅞	43¼	13¼	16,500	27,000	Hercules Powder Co.	No	606,234	1.50	1.04	2.61
....	92	90½	95	70½	119½	95	100	2,880	7% cum. pfd.	100	114,241	7.00		
1¼	3⅜	1¼	3½	¼	5¼	1	6,100	21,200	Intern. Agric.	No	450,000		Yr. Je.'30	1.68
....	15	8	15	3⅜	51¼	4½	2,300	8,600	7% cum. prior pfd.	100	100,000	7.00	Yr. Je. '30	14.58
9½	12½	8¼	12½†	3½	20¼	7	818,200	2,887,750	Intern. Nickel	No	14,584,000		.22	.67
9½	11	9½	11†	8	16½	9	1,100	16,000	Kellogg (Spencer)	No	598,000	.60		h1.14
12½	18	10½	22	9	55⅛	13½	31,800	134,900	Liquid Carbonic Corp.	No	342,000	1.00	2.96	5.22
18	20⅞	15½	20⅞	9	31½	12	71,500	201,600	Mathieson Alkali	No	650,426	1.50	1.88	2.96
....	100½	97	105	89¾	125⅜	106½	90	1,550	7% cum. pfd.	100	24,610	7.00		
25⅞	27½	22¼	30½	13⅜	29	16¼	21,200	104,800	Monsanto Chem.	No	416,000	1.25	2.98	1.73
17⅜	26⅜	17⅜	27½	13	36⅜	16	135,900	490,800	National Dist. Prod. cts. (new)	No	252,000	2.00	—	1.23
80	83	80	92	45	132	78½	700	21,100	National Lead	100	310,000	5.00		7.58
108	115	106	125	87	143	111	600	12,918	7% cum. "A" pfd.	100	244,000	7.00		
90½	100	86	105	61	120	102	210	3,750	6% cum. "B" pfd.	100	103,000	6.00		
3	4⅜	2⅜	4⅜†	1	9½	2	11,500	51,900	Tenn. Corporation	No	857,000	1.00		1.21
22½	25⅞	19⅜	26½	12	55¾	19½	128,800	731,100	Texas Gulf Sulphur	No	2,540,000	2.00	3.52	5.50
27⅛	31⅛	23	36⅜	15½	72	27⅛	554,700	3,227,996	Union Carbide & Carb.	No	9,001,000	1.20	2.00	3.12
16½	18	13	18†	6⅜	28⅜	6½	60,700	158,500	United Carbon Co.	No	398,000		—	1.43
31⅛	36½	31½	36½†	13½	77⅜	20⅜	167,100	1,269,200	U. S. Ind. Alc. Co.	No	373,846		—	z2.96
17½	23⅜	13½	23½†	5½	76¼	11	297,900	1,632,000	Vanadium Corp. of Amer.	No	378,367			2.95
1¼	2¼	1¼	2⅜	½	3½	⅛	11,300	905,800	Virginia Caro. Chem.	No	487,000		Yr. Je. '30	Nil
7¼	10	6	11¼	3¼	17	2½	3,200	23,800	6% cum. part. pfd.	100	213,000		Yr. Je. '30	2.63
60⅞	62¼	49½	65	20	72	35	2,700	19,200	7% cum. prior pfd.	100	145,000		Yr. Je. '30	11.96
9⅜	10½	8¼	12⅜	3	40	7⅝	11,300	70,350	Westvaco Chlorine Prod.	No		1.00	1.79	2.51
NEW YORK CURB												
5½	8¼	4¼	8½†	1⅜	12¼	2⅜	117,600	518,320	Amer. Cyanamid "B"	No	2,404,000		.21	
⅜	½	⅜	½	⅛	15	½	3,400	44,600	Anglo-Chilean Nitrate	No	1,757,000		Yr. Je. '30	Nil
....	2¼	1⅜	2⅛†	⅜	2⅜	⅞	1,200	11,700	Brit. Celanese Am. Rcts.	2.43	2,806,000			
45	45	24	46†	8	81¼	16½	1,550	6,700	Celanese 7% cum. part. 1st pfd.	100	148,000	7.00		
57	57	33⅞	57†	17	65	25	3,700	9,625	" 7% cum. prior pfd.	100	115,000	7.00		
....	5⅜	1⅞	31½†	20	...	...	4,000	6,550	Celluloid Corp.	No	195,000			
....	6¼	5½	6¼†	4½	9	5½	600	1,800	Courtaulds, Ltd.	1£				
39	36	33	39†	21½	51	30½	700	3,900	Dow Chemical	No	630,000	2.00		3.44
⅞	1	⅝	1†	¼			2,400		Duval Texas Sulphur	No	500,000			
10	10	10	10†	5½	13	6½	100	2,500	Heyden Chemical Corp.	10	150,000	1.00		
....	....	....	2⅞	2½	3½	2½		200	Imperial Chem. Ind.	1£			1.21	
16½	20½	16¼	20¼†	6½	60	20	2,300		Shawinigan W. & P.	No	2,178,000	1.00		
1⅛	3	1	3†	⅛	12	⅛	54,900	85,600	Silica Gel Corp.	No	600,000			
CLEVELAND STOCK EXCHANGE												
30	31½	25	21¾†	25*	....	....	214	264	Cleve-Cliffs Iron $5 pfd.	No	498,000	5.00	—	11.42
39½	40	32½	40†	21½	51½	30	1,361	8,879	Dow Chemical Co.	No	630,000	2.00		3.44
95½	96	91⅛	100	88			174		Dow Chemical Co., pfd.	100	3,000,000	7.00		
112	112	105½	120	100			176		National Carbon, pfd.	100	5,600,000	7.00		
PHILADELPHIA STOCK EXCHANGE												
34	39	34	39†	19⅛	75	37½	170	1,180	Pennsylvania Salt	50	150,000	3.00	Yr. Je. '30	7.97

1932 Sept. Last	1932 High	1932 Low	1931 High	1931 Low	Sales In Sept.	Sales During 1932	Bonds	Date Due	Int. %	Int. Period	Out-standing $
NEW YORK STOCK EXCHANGE											
....	79½	78	80†	62	99	69½	12	250	Amer. Cyan. deb. 5s	1942	5	A. O.	4,554,000
79	81	77⅛	80	54¼	102	52	227	2,464	Amer. I. G. Chem. conv. 5½s	1949	5½	M. N.	29,933,000
....	10½	7⅛	18	1	63½	7½	20	419	Anglo-Chilean s. f. deb. 7s	1945	7	M. N.	14,600,000
....	55½	47¼	60	34½	104	59	40	244	By-Products Coke Corp. 1st 5½s "A"	1945	5½	M. N.	6,629,000
104½	104½	103	104½	100⅝	105⅛	100	53	211	Corn Prod. Refin. 1st s. f. 5s	1934	5	M. N.	1,822,000
50¾	54½	49	54½	32			33		Int. Agric. Corp. 1st coll. tr. stamped to 1942	1942	5½		
6⅜	10½	6	15½	¼	75½	6	279	2,859	Lautaro Nitrate conv. 6s	1954	6	J. J.	32,000,000
92½	92½	91½	92¼†	67			4		Montecatini Min. & Agric. deb 7s with warrants	1937	7	J. J.	8,188,000
41½	44	35½	44†	17			94		Ruhr chemical s. f. 6s	1948	6	A. O.	3,578,000
....	89	87½	89½	66	103	80	13	710	Solvay Am. Invest. 5% notes	1942	5	M. S.	15,000,000
63	66	61½	66†	39	99	45	34	510	Tenn. Corporation deb. 6s. "B"	1944	6	M. S.	3,308,000
50	60	49	75	30			296		Vanadium Corp. conv. 5s	1941	5	A. O.	5,000,000
NEW YORK CURB												
....	71¾	67	76	55	98⅜	56	554,000	2,980,000	Shawinigan W. & P. 4½s. "A"	1967	4½	A. O.	35,000,000
71	71½	68	76	55	98½	58	88,000	943,000	4½s., series "B"	1968	4½	M. N.	16,108,000
38	65	35	65†	24			259,000		Silica Gel Corp. 6½s	1932	6½	A. O.	1 700,000
103	103⅛	102½	103⅛†	99	104½	95	16,000	651,000	Westvaco Chlorine Prod. 5½s	1937	5½	M. S.	1,992,000

h 11 mos. ending Aug. 30; w 13 mos.; z Before inventory adjustment; *New Low; †New High

SULPHURIC ACID

(Oil of Vitriol—Oleum—Mixed Acid—Battery Acid)

Muriatic Acid (Hydrochloric Acid)	Acetic Acid
Nitric Acid	Trisodium Phosphate
Hydrofluoric Acid	Sodium Sulphite
	Aluminum Sulphate

and other Heavy Chemicals of Standard Purity

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The Nichols Chemical Company
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Also **BAKER & ADAMSON C. P. ACIDS, Laboratory Reagents and Fine Chemicals**

Chemical Exports and Imports

U. S. Chemical Export Figures for July

ARTICLES	JULY 1931		JULY 1932	
GROUP 8.—CHEMICALS AND RELATED PRODUCTS.				
COAL-TAR PRODUCTS		1,526,689		486,608
Benzol—galls	6,010,279	1,029,658	5,463	1,555
Crude coal tar—bbls [1]	3,973	15,283	45,163	89,789
Coal-tar pitch—tons	232	4,336	32	714
Creosote oil—galls	235,920	34,731	6,300	1,740
Coal-tar colors, dyes, stains, and color lakes—lbs	1,479,182	360,356	1,479,500	319,228
Other coal-tar products, exclusive of medicinals—lbs	2,843,761	82,325	553,434	73,582
INDUSTRIAL CHEMICAL SPECIALTIES		1,021,057		732,023
Nicotine sulphate (40% basis)—lbs	16,479	12,130	6,630	4,488
Lead arsenate—lbs	280,491	27,323	128,491	9,450
Calcium arsenate—lbs	245,850	11,911	178,406	8,807
Other agricultural insecticides, fungicides, and similar preparations and materials—lbs	639,203	71,208	661,073	53,594
Household insecticides and exterminators—lbs	479,239	127,884		
Liquid—lbs			156,270	51,173
Powered or paste—lbs			35,640	10,291
Household disinfectants, deodorants, germicides, and similar preparations—lbs	176,522	17,164	90,150	8,172
Baking powder—lbs	364,973	113,065	159,223	40,237
Petroleum jelly—lbs	898,248	55,379	687,597	57,160
Tobacco extracts—lbs	112,174	17,507	52,706	8,241
Dextrine or British gum—lbs	1,065,511	40,947	565,707	21,159
Rubber compounding agents (accelerators, retarders, etc.)—lbs	181,262	110,264	84,639	37,448
Cementing preparations, for repairing, sealing, and adhesive use—lbs	218,747	29,503	221,161	27,510
Textile specialty compounds—lbs	309,848	21,483	824,901	15,273
Water softeners, purifiers, boiler and feed-water compounds—lbs	276,584	35,857	139,734	16,171
Metal-working compounds—lbs	47,685	8,143	45,222	5,771
Dry-cleaning preparations and stain removers—lbs	5,541	1,063	2,964	711
Other industrial specialty cleaning and washing compounds (exclusive of soap)—lbs	184,717	18,365	210,061	12,397
Polishes—				
Metal and stove polishes—lbs	51,501	8,564	37,253	5,036
Shoe polishes and shoe cleaners—lbs	147,710	45,085	77,297	19,413
Leather dressings and stains—lbs	150,877	29,718	222,736	27,230
Floor wax, wood and furniture polishes—lbs	78,292	15,446	64,878	11,544
Automobile polishes—lbs	107,712	28,384	42,090	11,138
Other polishing and buffing compounds—lbs	46,228	6,664	19,789	4,610
Other chemical specialty compounds, n. e. s		168,000		264,999
INDUSTRIAL CHEMICALS		1,861,244		1,154,107
Acids and anhydrides—				
Organic (exclusive of coal-tar acids)—lbs	25,170	5,205	14,941	2,908
Inorganic—				
Nitric—lbs	33,875	3,232	57,303	5,854
Sulphuric—lbs	372,945	5,947	103,986	3,926
Hydrochloric (muriatic)—lbs	188,631	4,486	225,289	5,092
Boric (boracic)—lbs	543,238	30,414	90,267	4,273
Other inorganic acids and anhydrides—lbs	378,502	32,630	579,594	21,001
Alcohols—				
Methanol—gals	77,662	33,951	47,733	20,434
Glycerol (glycerin)—lbs	11,568	1,579	12,166	1,316
Butanol (butyl alcohol)—lbs	29,562	3,781	126,020	11,733
Other alcohols—lbs	67,907	12,753	80,128	5,093
Acetone—lbs	401,723	26,291	241,273	16,992
Carbon tetrachloride—lbs	54,139	2,518	27,440	1,688
Carbon bisulphide—lbs	264,907	13,449	293,352	14,474
Formaldehyde (formalin)—lbs	168,741	10,023	40,163	2,206
Ethylene compounds—lbs	39,633	5,615	5,037	2,139
Citrate of lime—lbs	332,878	42,100	1,015,715	64,000
Other synthetic organic products—lbs	120,906	35,326	271,959	48,751
Nitro or aceto cellulose solutions, collodion, etc—lbs	150,615	50,691	231,314	38,704
Ammonium compounds (except sulphate, phosphate, and anhydrous ammonia)—lbs	107,778	5,629	83,194	4,046
Aluminum sulphate—lbs	4,736,078	53,250	3,890,256	40,045
Other aluminum compounds—lbs	144,406	11,689	20,539	1,207
Calcium compounds—				
Carbide—lbs	226,113	9,087	163,023	6,378
Chlorinated lime (bleaching powder)—lbs	188,493	6,124	336,763	8,561
Chloride—lbs	6,947,830	78,612	3,222,181	34,640
Other, except arsenate, cyanide, and citrate—lbs	64,694	4,371	63,609	6,873
Copper sulphate (blue vitriol)—lbs	765,477	28,917	202,497	5,616
Hydrogen peroxide (or dioxide)—lbs	88,276	11,816	57,932	8,589
Potassium compounds (not fertilizers)—lbs	325,769	36,550	138,469	19,637
Sodium compounds—lbs	45,848,731	919,562	33,086,474	558,666
Bichromate and chromate—lbs	176,263	11,977	256,521	14,522
Cyanide—lbs	95,833	13,610	23,018	3,507
Borate (borax)—lbs	17,872,967	337,991	16,499,214	220,039
Silicate (water glass)—lbs	3,986,052	36,315	2,899,530	26,312
Soda ash—lbs	5,780,565	88,783	2,798,054	44,487
Sal soda—lbs	805,008	11,891	568,991	8,448
Bicarbonate (acid soda or baking soda)—lbs	1,682,554	30,591	823,261	15,515
Sulphate—lbs	691,720	5,284	45,543	1,082
Bisulphate (niter cake)—lbs	2,235,760	11,821	19,219	500
Hydroxide (caustic soda)—lbs	11,437,713	317,066	8,379,595	187,179
Sulphide—lbs	52,269	770	22,282	782
Fluorides—lbs	945	138	1,300	98
Sodium phosphate (mono, di, or tri)—lbs	434,847	12,775	375,851	10,810
Other sodium compounds—lbs	616,235	40,550	374,095	25,385
Tin compounds—lbs	94,825	19,659	80,848	10,957
Zinc compounds—lbs	303,278	13,308	37,303	2,559
Gases, compressed, liquefied, and solidified—				
Ammonia, anhydrous—lbs	125,024	17,778	78,022	9,140
Chlorine—lbs	757,043	18,944	547,561	12,953
Other gases, n. e. s—lbs	363,043	48,813	419,043	36,059
Other industrial chemicals		257,144		117,597
PIGMENTS, PAINTS, AND VARNISHES		1,219,014		981,178
Mineral-earth pigments—				
Ocher, umber, sienna, and other forms of iron oxide for paints—lbs	1,151,699	23,942	565,740	12,653
Other mineral-earth pigments (whiting, barytes, etc.)—lbs	3,969,326	14,082	525,669	5,516
Chemical pigments—				
Zinc oxide—lbs	896,461	62,573	94,629	9,238
Lithopone—lbs	530,120	24,182	191,300	8,483
Bone black and lampblack—lbs	292,613	12,583	81,418	5,690
Carbon black or gas black—lbs	7,388,992	360,838	10,848,456	493,660
Red lead, litharge, and orange mineral—lbs	275,473	17,567		
Red lead—lbs			121,630	6,975
Litharge—lbs			125,519	5,462
White lead—lbs	1,045,374	55,298		
Dry—lbs			79,323	4,223
In oil—lbs			24,920	1,702
Other chemical pigments—lbs	291,677	39,853	288,734	42,838
Bituminous paints, liquid and plastic		40,082		42,813
Paste paint—lbs	546,966	58,052	110,826	19,741
Kalsomine or cold-water paints, dry—lbs	493,520	26,983	558,672	29,381
Nitrocellulose (pyroxylin) lacquers—				
Pigmented—gals	35,338	88,861	18,503	50,782
Clear—gals	11,241	18,847	8,178	16,495
Thinners for nitrocellulose lacquers—gals	29,444	36,665	15,754	17,134
Ready-mixed paints, stains, and enamels—gals	137,649	288,847	96,265	172,393
Varnishes (oil or spirit, and liquid dryers)—gals	35,002	47,350	23,305	34,153
Paint and varnish removers—gals	1,547	2,409	2,452	1,846
FERTILIZERS AND FERTILIZER MATERIALS—tons	89,409	733,893	60,359	501,811
Nitrogenous fertilizer materials—				
Ammonium sulphate—tons	1,994	64,918	263	6,382
Other nitrogenous chemical materials—tons	4,790	189,433	7,079	195,883
Nitrogenous organic waste materials—tons	294	2,975	291	5,604
Phosphatic fertilizer materials—				
Phosphate rock—				
High-grade hard rock—tons	5,065	33,232	812	4,060
Land pebble—tons	72,084	324,861	46,217	205,828
Superphosphate (acid phosphate)—tons	3,242	34,619	4,554	43,377
Other phosphate materials—tons	279	17,798	141	6,482
Potassic fertilizer materials—				
Potassium chloride or muriate—tons	27	1,202		
Other potash fertilizers—tons			107	4,179

Compiled from Monthly Summary of Foreign Trade of the United States, of the Dept. of Commerce

First column denotes quantity and the second, value

U. S. Chemical Export Figures for July (*Continued*)

ARTICLES	JULY 1931 Quantity	JULY 1931 Dollars	JULY 1932 Quantity	JULY 1932 Dollars
GROUP 8.—CHEMICALS AND RELATED PRODUCTS—Con.				
Concentrated chemical fertilizers—				
Nitrogenous phosphatic types ..tons..	1,137	47,819	589	20,640
Nitrogenous potassic types..tons..				
Nitrogenous phosphatic potassic types..tons..				
Prepared fertilizer mixtures..tons..	497	17,036	306	9,376
EXPLOSIVES, FUSES, ETC		133,475		106,919
Explosives—				
Smokeless powder..lbs..	41,619	31,843	14,335	7,672
Other gunpowder..lbs..	30,443	2,270	3,937	1,199
Blasting powder..lbs..	1,250	125	32,950	4,910
Dynamite..lbs..	497,058	71,141	328,460	40,285
Other explosives..lbs..	1,572	1,758	80,000	11,676
Safety fuses..lin. ft..	2,715,000	14,110	6,056,553	30,618

ARTICLES	JULY 1931	JULY 1932
GROUP 8.—CHEMICALS AND RELATED PRODUCTS—Con.		
Blasting caps..No..	725,500 / 12,228	576,600 / 10,559
SOAP AND TOILET PREPARATIONS	991,030	544,585
Soap—		
Medicated..lbs..	29,949 / 16,503	32,675 / 19,747
Toilet or fancy..lbs..	486,270 / 100,895	619,724 / 85,459
Laundry..lbs..	1,727,981 / 107,454	1,565,506 / 72,418
Powdered or flaked..lbs..	122,614 / 9,946	53,604 / 4,620
Shaving creams..lbs..	97,775 / 28,852	58,194 / 17,121
Shaving cakes, powders, and sticks ..lbs..	41,613 / 13,546	28,220 / 8,079
Other soap..lbs..	102,600 / 14,896	84,785 / 8,782
Scouring soaps and scouring powders ..lbs..	534,332 / 35,792	
Scouring soaps, bricks, pastes, and powders..lbs..		281,787 / 22,542
Household washing powders..lbs..		48,515 / 2,925

U. S. Chemical Import Figures for July

ARTICLES	JULY 1931 Quantity	JULY 1931 Dollars	JULY 1932 Quantity	JULY 1932 Dollars
GROUP 8.—CHEMICALS AND RELATED PRODUCTS.				
COAL-TAR PRODUCTS		1,371,671		276,573
Dead or creosote oil, free..galls..	6,625,874	661,681	293,244	27,822
All other crudes, free		69,875		28,588
Acids, dut..lbs..	110,700	7,217	110,538	23,202
All other intermediates, dut..lbs..	42,811	76,800	68,827	23,472
Colors, dyes, stains, color acids, and color bases, n. e. s., dut..lbs..	519,303	536,515	141,077	141,540
Coal-tar medicinals, dut..lbs..	1,420	6,459	3,945	12,071
Other finished coal-tar products, dut..lbs..	5,187	13,124	6,413	19,878
INDUSTRIAL CHEMICALS		1,506,169		846,648
Acetylene, butylene, ethylene, and propylene derivatives, dut..lbs..	61,685	7,948	24,736	2,255
Acids and anhydrides—				
Acetic or pyroligneous, dut..lbs..	1,048,140	60,124	301,920	16,368
Arsenious (white arsenic), free..lbs..	1,138,471	35,598	889,832	23,400
Formic, dut..lbs..	11,200	617	3,307	204
Oxalic, dut..lbs..	21,422	1,098	13,566	693
Sulphuric (oil of vitriol), free..lbs..	324,600	4,058	65,002	830
Tartaric, dut..lbs..	210,428	46,957	116,764	16,294
All other free..lbs..			3,050	299
All other dut..lbs..	84,364	14,044	100,113	16,471
Alcohols, n. e. s., including fusel oil dut		2,181		1,250
Ammonium compounds, n. e. s.—				
Chloride (muriate), dut..lbs..	479,805	13,321	229,404	5,705
Nitrate, dut..lbs..	477,757	14,020	244,155	5,119
All other, dut..lbs..	74,844	3,877	43,145	1,630
Barium compounds, dut..lbs..	421,171	8,614	23,679	460
Calcium compounds, dut..lbs..			1,102	22
Cellulose products, n. e. s.—				
Acetate, dut..lbs..	670	510	4,478	2,864
All other—				
Sheets, more than 3/1000 inch thick, and other forms, dut..lbs..	38,305	47,570	10,982	9,306
Sheets and strips more than one inch wide, not over 3/1000 inch thick, dut..lbs..	2,517	1,851	1,170	2,094
Cobalt oxide, dut..lbs..	40,985	46,787	7,806	7,122
Copper sulphate (blue vitriol), free ..lbs..	173,533	6,442		
Copper sulphate grossweight..lbs..			35,174	1,091
Copper sulphate copper content, dut ..lbs..			8,818	
Glycerin, crude, dut..lbs..	822,007	41,561	74,267	1,484
Glycerin, refined, dut..lbs..	113,651	8,415	130,990	7,830
Iodine, crude, free..lbs..	11,052	36,472	45,004	157,789
Lime, chlorinated, or bleaching powder, dut..lbs..	143,577	4,260	151,069	3,545
Magnesium compounds, dut..lbs..	1,345,300	24,194	952,098	9,123
Potassium compounds, n. e. s.—				
Argols, tartar, and wine lees, free ..lbs..	2,121,404	180,110	1,474,615	92,308
Carbonate, dut..lbs..	858,925	36,178	479,839	19,227
Chlorate and perchlorate, dut..lbs..	970,024	33,268	897,236	31,779
Cream of tartar, dut..lbs..	11,000	1,925	5,500	584
Cyanide, free..lbs..	3,307	1,148	1,654	585
Hydroxide (caustic potash), dut ..lbs..	779,505	39,272	357,195	17,175
Nitrate, crude (salt peter), free ..tons..	876	31,903	431	27,993
Other potassium compounds, n. e. s. dut..lbs..	430,199	22,031	158,332	11,130
Sodium compounds, n. e. s.—				
Chlorate, dut..lbs..			22,046	920
Sulphate, crude (salt cake), free ..lbs..	9,799,550	50,660	10,715,239	56,963
Cyanide, free..lbs..	1,926,930	204,434	1,721,614	142,388
Ferrocyanide (yellow prussiate), dut..lbs..	103,212	8,958	52,737	4,475
Nitrite, dut..lbs..	301	56	300	54

ARTICLES	JULY 1931	JULY 1932
Phosphate (except pyrophosphate), dut..lbs..	253,926 / 7,988	1,003 / 80
Other sodium compounds, n. e. s. free..lbs..	1,120,562 / 16,412	
Other sodium compounds, n. e. s. dut..	55,058	26,761
Radium salts, free..grains..	19 / 66,607	1 / 5,488
Other industrial chemicals free..	132,257	20,094
Other industrial chemicals dut..	187,385	95,396
PIGMENTS, PAINTS, AND VARNISHES	211,933	75,663
Mineral earth pigments—		
Iron oxide and iron hydroxide, dut ..lbs..	1,370,960 / 25,351	648,612 / 11,569
Ochers and siennas, dut..lbs..	1,472,037 / 21,227	753,230 / 9,399
Other mineral earth pigments, dut..	36,031	3,685
Lithopone and zinc pigments, n. e. s., dut..lbs..	1,960,000 / 64,534	112,000 / 2,896
Zinc oxide and leaded zinc oxide, dut..lbs..	167,997 / 10,736	210,581 / 9,148
Other chemical pigments, dut..lbs..	349,080 / 32,243	195,686 / 10,232
Paints, stains, and enamels, dut..	19,099	25,076
Varnishes, dut..galls..	1,477 / 2,712	3,468 / 3,657
FERTILIZERS AND MATERIALS..tons..	96,395 / 2,688,816	48,471 / 992,655
Nitrogenous—		
Ammonium sulphate, free..tons..	2,268 / 72,370	19,797 / 321,724
Ammonium sulphate-nitrate, free ..tons..		
Calcium cyanamide or lime nitrogen, free..tons..	1,992 / 55,009	4,029 / 118,053
Calcium nitrate, free..tons..	4 / 145	
Guano, free..tons..	17 / 441	
Dried blood, free..tons..	251 / 9,113	41 / 744
Sodium nitrate, free..tons..	18,809 / 725,560	100 / 2,457
Urea and calurea, free..tons..	126 / 12,538	49 / 4,426
Other nitrogenous, free..tons..	484 / 8,825	1,118 / 22,939
Phosphates—		
Bone ash, dust, and meal, and animal carbon fertilizers, free..tons..	3,512 / 74,816	1,674 / 27,041
Other phosphate material, free ..tons..	269 / 8,481	1,840 / 21,903
Potash fertilizers—		
Chloride, crude (muriate), free..tons..	23,425 / 835,686	7,211 / 252,527
Kainite, free..tons..	3,271 / 27,063	3,558 / 36,392
Manure salts, free..tons..	32,655 / 469,144	4,878 / 62,854
Sulphate, crude, free..tons..	8,352 / 368,531	2,517 / 103,100
Other potash-bearing substances free..tons..	58 / 356	8 / 56
Fertilizers, compounded, or chemically combined, containing nitrogen, phosphoric acid and potash, free..tons..	96 / 5,262	
All other, free..tons..	806 / 15,476	1,651 / 18,439
EXPLOSIVES	4,402	2,445
Powder and other explosives, n. e. s. free..lbs..		
Powder and other explosives, n. e. s. dut..		
Firecrackers, dut..lbs..	2,577 / 317	2,126 / 194
Fireworks and ammunition, dut..	4,085	2,251
SOAP AND TOILET PREPARATIONS	294,513	111,590
Soap—		
Castile, dut..lbs..	240,191 / 22,155	189,464 / 13,164
Toilet, dut..lbs..	81,575 / 27,389	29,404 / 10,114
All other, dut..lbs..	181,558 / 17,202	109,565 / 7,955
Perfume materials free..lbs..	378 / 41,774	171 / 17,870
Perfume materials dut..		46,310 / 43,455
Perfumery, bay rum, and toilet water, dut		97,557 / 9,082
Bath salts, dut..lbs..	530 / 115	291 / 50
Cosmetics, powders, creams, etc. dut	42,411	9,900

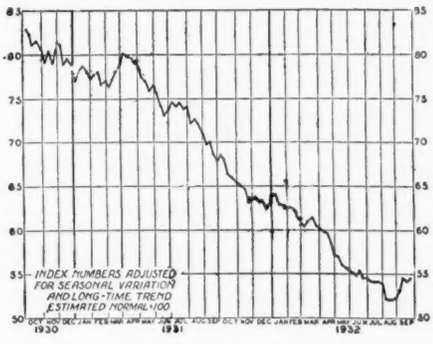
The Trend of Prices

State of Business

The sustained recovery in textiles continued to feature the business news. Rayon producers announced full-time schedules and several plants are booked to capacity until the first of the year. Rayon production for September is estimated at 90 per cent, against, 20 per cent in July, an increase of 350 per cent. September sales reached 10,000,000 pounds. It is generally conceded that sales of rayon in August and September, were of record proportions. Seasonable weather aided the movement of retail merchandise into consuming channels and wholesalers are eagerly waiting replacement orders. Shoe production was reported in the St. Louis area to be close to normal.

In the heavy industries the reports were not quite so favorable, although steel mill activity rose from 14 per cent to 17½ per cent, and for the first time in months unfilled steel orders showed a slight increase. Automobile production slowed down in September. New models are being brought out and a higher rate of manufacture is expected in October. Carloadings were at the highest figure in the third week of September since early in May. Building activity, while still quiet, was showing definite indications of improvement.

N. Y. Times Index of Business Activity



Commodity prices generally reflected the uncertainty surrounding the stock market. Prices showed losses from the August high, but recovered with stocks to close the month with but a small net loss. Fisher's index of wholesale commodity prices declined moderately from 62.5 on Sept. 2 to 62.2 on Sept. 30. Cotton declined under better weather, larger liquidation and hedge selling. Wheat declined in sympathy with stocks and cotton, while corn sold at the lowest price in 35 years.

The better feeling engendered by the sensational rise in stocks in August is persisting and the feeling is widespread that the worst is over. However, the first enthusiasm having subsided, the country is sobered to the thought that recovery may be a long and painful process.

The New York Times Index of Business Activity advanced in September. The following table gives the combined index and its components, each of which is adjusted for seasonal variation and where necessary for long-time trend:

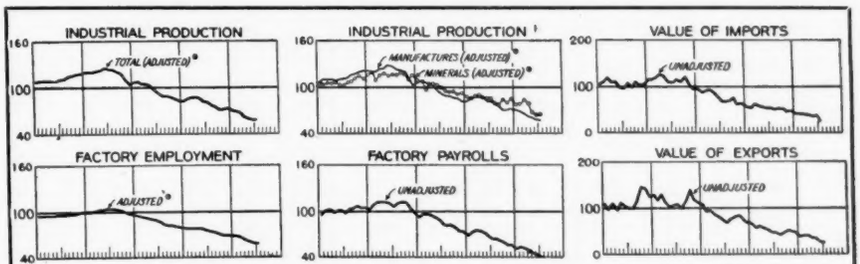
	Week Ended		
	Sept. 24 1932	*Sept. 17 1932*	*Sept. 10 1932*
Freight car loadings	52.5	52.5	51.5
Steel mill activity	21.6	19.7	20.2
Electric power production	68.1	67.1	69.2
Automobile production	24.2	*25.7	25.6
Carded cotton cloth prod	94.8	95.2	95.0
Combined index	54.5	*54.0	54.5

*Revised.

Indices of Business

	Latest Available Month	Previous Month	Year Ago
Automobile Production, July	111,139	183,092	218,490
†Brokers Loans, Sept. 1	$331	$241	$1,354
*Building Contracts, Aug.	$133,988	$128,768	$233,106
*Car Loadings, Sept. 17	587	501	742
†Commercial Paper, Aug. 31	$108	$100	$271
Payrolls, July	40	43	64
*Mail Order Sales, July	$32,007	$39,889	$45,093
Failures, Dun, Aug.	$77,031	$139,483	$53,025
*Merchandise Imports, Aug.	$91,000	$79,000	$166,679
*Merchandise Exports, Aug. 1	$109,000	$107,000	$164,000
Furnaces in Blast, Aug. 1	16.1	16.1	26.1
*Steel Orders, Aug. 31	1,969	1,966	3,169

*000 omitted. †000,000 omitted.



Business indicators, Department of Commerce. The weekly average 1923-25 inclusive = 100.

Chemical Prices

Movement of industrial chemicals into consuming channels continued to expand in September. While the gain last month over August was very slight, it served to encourage producers. It is now expected that the last quarter of the year will show the greatest tonnage. The textile and rayon fields were largely responsible for the increase, but the paper, glass, lacquer and soap industries were all operating at better schedules.

Interest is now rapidly centering on contract prices for the coming year. During September carbon black producers announced a duplication of 1932 prices for 1933, while naphthalene was increased one cent a pound. Practically all of the larger chlorine consumers are now under contract at the $1.55 figure. The alkali producers have not as yet given any indication of their attitude towards contract prices and the feeling is general that the announcement of the schedule will be withheld as long as possible. Producers are encouraged at the pickup in rayon and this increase is expected to take out about 25,000 tons of caustic out of the market between now and Jan. 1.

Advances in metals were responsible for higher prices for tin salts and copper sulfate. Leading producers of the latter report one of the best September tonnages on record due, of course, to forward buying when the price of copper began to go up late in August. It is likely that shipments in October and November will be small. In the fertilizer field, both ammonium sulfate and sodium nitrate were advanced 50 cents a ton. Quotations on sulfate are largely nominal, however, as both domestic producers and importers are marking time waiting further developments. The lead salts were first reduced ½ cent and then increased ¼c in the first few days of October, due to rather wide fluctuations in the metal. Generally speaking, naval stores, shellac, and the fats and oils were firmer. Coal tar chemicals were in fair demand and the small increase in steel mill activity did not effect the price stability. Dyes were in better demand with prices stable. The fine chemical market was featured by a further decline in tartaric acid and increases in the crude grades of glycerine. In several quarters, however, it was felt that the strengthening was only temporary, and with the reentrance of several producing factors now out of the market, weakness would develop. With the anti-freeze season close at hand alcohol producers were firm in their price attitude and expect to be able to maintain the present schedule to the end of the year.

Market Comment

Important Price Changes

Advances	Sept.	Aug.
Acetanlid	$ .26	$ .22
Albumen	.81	.79
Casein	.06½	.06
Candelilla wax	.11	.10
Carnauba wax No. 1	.22½	.21½
No. 2	.21½	.20½
No. 2, N. C.	.16	.15
No. 3, chalky	.12	.11
Copper Sulfate	3.00	2.75
Glycerine Saponification	.05	.04½
Soap Lye	.04⅜	.04
Gums, Arabic, amber sorts	.06¼	.06
Benzoin Sumatra	.19	.18
Japan Wax	.06¾	.06
Linseed cake	22.50	21.00
Naphthaline, flakes	.04¾	.03¾
Nickel salts	.11	.10½
Rosin oil, 1st run	.42	.41
2nd run	.46	.45
Sodium nitrate, bulk	22.90	22.40
200 lb. bags	24.20	23.70
100 lb. bags	24.90	24.40
Sodium Stannate	.18½	.17½
Tin crystals	.25	.24
Tin tetrachloride	.1735	.1645
Turpentine	.46¾	.45
Wattle bark	29.00	26.50
Valonia beards, ship	30.00	29.00

Declines		
Alcohol, phenylethyl	3.75	3.90
Acid, chromic	.11¾	.12
Acid, tartaric	.22	.22½
Blood, dried	1.65	1.75
Gum, Mastic	.34	.36
Mangrove bark	21.00	22.00
Superphosphate, run of pile	7.00	7.50
16%	7.50	8.00
Tankage, ground	1.50	1.70
Unground	1.40	1.50

Acetone — Producers report better shipments in September than in August. The drag in automobile production has been longer than was at first expected, with the result, that lacquer production has not picked up as quickly as anticipated. Demand from other consuming channels was fair, but buyers are still continuing to order in small quantities, although more often. Prices were firm. Producers have not indicated 1933 contract prices.

Acid Acetic — Decided improvement in the rayon industry was reflected in sizable increases in shipments of acid. According to reports from the textile centers, the larger rayon producers are booked to capacity for the balance of 1932 and acid manufacturers are looking forward to better tonnages in the last quarter.

Acid Chromic — A further reduction was made during the month in quotations for large size orders. Buying for spot delivery in the automobile centers was less in September than in the previous month. Automobile production in September underwent a further marked decline to a level not greatly above the record low point of the week of Nov. 7, 1931 as measured by the *N. Y. Times* index of automobile production.

Acid Citric — Aside from the usual seasonal decline, the market was without change. A summary of Italian conditions is given in the Fine Chemical Section of "Chemical Facts and Figures."

Acid Formic — Expansion in both textiles and tanning resulted in an appreciable increase in shipments.

Acid Oxalic — Trading was of a routine nature with prices firm.

Acid Sulfuric — The slight rise in steel mill operation failed to effect appreciably the quiet state of trading in this commodity. Producers are successfully holding production down, so that there is no large surplus to plague the market. Contract prices for 1933 are as yet unannounced.

Acid Tartaric — The downward price movement was renewed as the month ended with domestic material being offered at 22c. Business is spotty and the competition between domestic and imported material continues unchanged. July imports amounted to 116,764 pounds as against 210,428 pounds in the same month a year ago.

Albumen — Trading became more active during the past month and prices were advanced. Stocks are understood to have declined.

Alcohol — Jobbers of anti-freeze came into the market in larger numbers and a fair portion of the season's business was reported as being closed. Despite serious efforts to obtain concessions, producers were holding closely to schedule. Leading factors look for stable prices over the remainder of the year. Quotations for denatured to be delivered during the period Oct. 1 to Dec. 31 are as follows:

	Cents per gallon
*C. D. No. 5, drums, car lots	38.5
5 to 19 drums	44.5
1 to 4 drums	46.5
S. D. No. 1, tanks	30.4
drums, car lots	34.6
5 to 19 drums	40.6
20 drums	36.6
1 to 4 drums	42.6
barrels, car lots	37.6
5 to 19 barrels	43.6
1 to 4 barrels	45.6

*Credit of 1c per gallon given on purchases of three carlots or more.

Ammonia, Aqua — Drum shipments for textile consumption featured an otherwise dull and listless market.

Ammonia, Anhydrous — Aside from the expected seasonal decline in tonnage, the market was unchanged. Prices were firm and there is little liklihood of any sudden altering of the controlling conditions.

Ammonium Sulfate — Domestic producers and importers were both marking time and quotations were largely nominal with little material actually changing hands. At the end of September domestic producers announced an advance of 50c per ton bringing the October price to $21.00. November delivery is quoted at $21.50 and December at $22.00. The domestic production of sulfate or its equivalent, recovered from by-product coke operations in August, was 24,956 tons, compared with 25,795 tons in July and 41,496 tons in August, 1931. Total estimated production for the first eight months of this year was 243,290 tons, against 392,949 tons in the corresponding period of 1931.

Benzol — The continued decline in coking operations has prevented any large stocks from accumulating. Demand was fair in most consuming lines with prices well maintained. Coking coal charged in by-product ovens in August amounted to 2,126,700 tons, as compared with 2,198,100 tons in July and 3,536,100 tons in August a year ago, with the rate for the year showing a decrease of 38.1 per cent. Amount of light oils recovered was 6,507,702 gallons in August, as against 6,766,186 gallons in July and 10,820,466 gallons in August last year. Estimated from the production of coke at by-product ovens known to recover benzol, the output was 3,266,000 gallons in August, as against 3,349,000 in July and 5,772,000 gallons in August last year. Tar recovered amounted to 19,565,640 gallons, as against 20,422,520 gallons in July and 32,632,120 gallons in August last year.

Bleaching Powder— The market was firm with buyers limiting purchases to relatively small quantities. The competitive position in chlorine did not effect bleaching powder prices. With the use of the latter now practically limited to processes where liquid chlorine is unsuitable these two commodities are no longer competitive in the same sense that they were a few years ago.

Carbon Black — Without much show of enthusiasm producers announced a duplication of this year's contract price for 1933. Producers stress the fact that this figure is below the actual cost of production, but the competitive position of the industry has prevented any price alterations. Shipments into the rubber centers declined in September.

Carnauba Wax — A rather serious shortage developed in the local market as the month closed. Quotations were advanced by the dealers, but they were unwilling to make firm offerings at any figure.

Casein — With domestic production at a very low ebb and the paper industry coming into the market in a larger way, leading factors were able to effect an increase of ½c on most grades and it is not unlikely that further increases will be made.

Chlorine — The competitive position in this commodity ended early in the month with practically all tonnage contracted for at the reduced schedule. It is reported that very little business changed hands. A slight pickup was noted in the paper industry, but this was offset by

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the seasonal decline in shipments for water purification purposes. Cylinder prices were unaffected in the resent decline in tank car quotations.

Copperas — The slight increase in steel mill operations, from 14 to 17½ per cent, was more than offset by larger demands from the textile centers. Prices were unchanged.

Copper Sulfate — Shipments were heavy in September, caused by the buying flurry when copper started to go up late in August. The better tone in the metal market was reflected in an increase of 25c per hundred pounds for sulfate. The new carload price is $3.00 per hundred pounds.

Cresylic Acid — Consumption in the textile centers was better, but only a few inquiries for mining purposes were reported.

Dried Blood — Weakness prevailed in this item. Sales were reported locally at $1.65 per unit. In Chicago, sales of high-grade ground were reported at $1.24. South American material was quoted at $2.00 with offerings light. Importers report heavy sales of S. A. material direct to European ports.

Dyestuffs — Shipments, particularly of the darker colors for the textile and leather industries, were decidedly better, with prices firmly held. Silk industry employment increased 26.6 per cent during August, compared with July and was also 2.5 per cent greater than in August 1931. September shoe output showed a slight increase over the August production of 26,000,000 pairs.

Ethyl Acetate — Consumption was adversely effected by the slump in automobile production.

Glaubers Salt — Textile dyeing centers were more active and shipments in this field and also into the leather industry were in better volume. The anhydrous salt was going forward to the color manufacturers in more encouraging quantities.

Glycerine — With a greatly increased advertising program planned, glycerine producers were hopeful of moving larger quantities of anti-freeze material in the coming season. Saponification and soap lye grades were advanced during the month. It was reported, however, that only one large refiner was offering material, with the others holding off awaiting further developments. It was felt in several quarters that the advance could not be maintained indefinitely.

Litharge — Weakness in the metal market forced quotations down ½c on Oct. 1. On Oct. 4 with the metal again showing definite signs of strengthening, litharge was advanced ¼c to 5¾c.

Mercury — The market in this item fluctuated within very narrow limits. Interest centered in the changes in sales representation in this country caused by the withdrawal of Peabody & Co. It is expected that the price of mercury will vary but very little in the immediate future, despite the definite abandonment of the Italian-Spanish cartel by the producers.

Methanol — Producers of synthetic material are optimistic about the prospects of increasing consumption in anti-freeze. Production of crude methanol in July totaled 111,077 gallons compared with 135,837 gallons in the previous month. Output of refined wood methanol amounted to 83,534 gallons as against 97,154 gallons in June. Manufacture of synthetic methanol reached 793,639 gallons in July, whereas it totaled 712,059 gallons in June. Stocks of crude at the end of July totaled 532,941 gallons; at the end of June they were 511,120 gallons. Stocks of refined wood methanol totaled 242,573 gallons at the end of July as against 276,287 gallons in June. Supplies of synthetic methanol at the end of July were 3,351,265 gallons; at the end of June they were 2,852,059 gallons.

Naphthalene — The new 1933 price schedule, released as the month ended, shows a higher price, 4¾c, for flake material. The balls are quoted at the same figure, unchanged from this year's price. Dyestuffs grade prices were also repeated.

Naval Stores — Rosin prices were generally higher in September and several grades went to new highs in the local market. News from the primary markets indicate better sentiment largely caused by reports that stocks are slow in accumulating at shipping centers. From present indications it appears likely that the present crop, now on its last quarter, will run 25 per cent lower in volume than the previous one. Offerings were being readily taken up by dealers and the basic conditions are in a more healthful state than for sometime past. No definite information is as yet on hand as to the disposition of the I. C. Bank rosin stocks which are regularly included in the port statistics. These are no longer as feared, however, due to the reduced production and the improved tone of the market.

Nickel Salts — Both the single and double salts were advanced ½c per pound, the new price for both being 11c. A firmer tone in the metal market was responsible for the advance, rather than any improvement in plating operations.

Potash Caustic — Soap manufacturers were, generally, more active. The price structure is unchanged and while contract prices for 1933 are still unannounced, it is generally thought that this year's quotations will be repeated for 1933.

Potash — Representative of foreign producers announced during the last week of September that the prices which were nominally in effect only to the end of September are extended until April 30. A slight flurry occurred in the local market when a shipment of 500 tons of Dead Sea potash arrived. In Jacksonville it was reported that 10,000 bags of Japanese potassium sulfate were received. The list prices on imported potash from regular sources are as follows: Muriate, 80-85 per cent, minimum 80 per cent, $37.15 per ton in bags and $35.55 per ton in bulk; sulfate, 90-95 per cent, minimum 90 per cent, $47.50 per ton in bags; magnesia-sulfate, 48-53 per cent, minimum, 48 per cent, $27.80 per ton; manure salt, 30 per cent, $19.15 per ton in bulk; kainit, 20 per cent, $12 per ton in bulk; and kainit, 14 per cent, $9.70 per ton in bulk. The discounts on imported salts are as follows: On orders with specifications placed prior to Nov. 1 for November shipment, 3 per cent; prior to Dec. 1 for shipment during December, January or February, 2 per cent. Orders placed on and after Dec. 1 for any shipment between Dec. 1, 1932, and April 30, 1933, list prices apply without discount. Discounts on domestic muriate California material are as follows: For shipment in October, 4 per cent; November, 3 per cent, and December, 2 per cent. A discount of 5½ per cent is allowed on domestic 25 per cent manure salt throughout the season. That discount also applies on 30 per cent manure salt and muriate of potash New Mexico material.

Red Lead — Lead oxides generally were off when the metal declined as the month ended. Red lead in casks was offered at 6½c, a reduction of ½c. The previous movement was an advance of ½c on Aug. 26. On Oct. 4 an increase of ¼c raised the price to 6¾c.

Saltcake — Movement into both the paper and flat glass industries improved in September and prices were firm and unchanged.

Shellac — September deliveries were heavier than in August. Stocks in consumers' hands are thought to be very small and bleachers had no difficulty in moving out material. Prices were steady. Most factors were withholding offerings beyond the first of the year in the belief that conditions would warrant an advance.

Soda Ash — A gradual improvement was noted by leading producers, shipments in September being slightly better than in August and considerably above the July figures. Producers have not as yet indicated what their attitude on prices will be for next year. Of the June exports of 3,020,705 pounds, Argentina received 281,100 pounds; Mexico, 1,681,358 pounds; Brazil, 195,000 pounds; Cuba, 254,525 pounds, and Canada, 243,245 pounds.

Caustic Soda — Interest centered in speculation as to 1933 contract prices. Consumers are wondering what effect the recent competitive situation in chlorine will have on caustic soda. Producers are hopeful of still further improvement over the remaining months in the rayon and textile fields. September shipments were slightly in excess of August totals. Of

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the June exports of 9,119,587 pounds, Canada received 477,441 pounds; Mexico, 2,183,675 pounds; Argentina, 1,173,900 pounds; Japan, 1,285,430 pounds; Philippine Islands, 1,293,037 pounds, and Brazil, 598,750 pounds.

Sodium Bichromate — The improvement in the textile field did not help appreciably, as consumption in this industry is relatively small. A slightly better demand from the color producers was reported, but as yet conditions are considerably below normal. No indication as yet has been given as to 1933 contract figures. Generally these are released somewhere between the first and fifteenth of October. Last year, at this time, the unexpected entrance of a new producer brought about a highly competitive position and the price declined from around seven to five cents. The latter figure is said to be below the cost of production.

Sodium Cyanide — Demand was only fair. Plating operations are still curtailed, but a change is looked for with several of the larger companies in the Detroit area now starting up after being closed for several weeks. Of the July imports of 1,721,614 pounds, France shipped 120,800 pounds; Germany, 840,100 pounds; Canada, 759,714 pounds, and Holland, 1,000 pounds.

Sodium Nitrate — The expected advance of 50c per ton was finally announced as the month ended, and importers are now quoting bulk at $22.90; 200 lb. bags at $24.20; and 100 lb. bags at $24.90. Domestic producers of synthetic material are expected to fall in line with the higher schedule. The political uncertainty surrounding the reorganization of the Cosach and its adherence to any cartel agreement makes it difficult to forecast conditions with any degree of certainty.

Sodium Phosphate — The di-salt has been in good demand as silk weighting operations increased in the Paterson and New England areas. Business in the tri-salt has, on the other hand, not experienced any appreciable improvement. Productive capacity in excess of consumption prevents any great degree of stability, particularly in the local market.

Sodium Prussiate — Color manufacturers are reported to be slightly more active, but buying is still being done in small quantities. Quotations were unchanged at 17½-19c.

Sulfur — Producers are quoting $18 a ton and the market continues firm. Reports from abroad state that efforts are still being made to reorganize Sicilian producers and to include the Montecatini. As yet no definite action has been taken. Basic industries, which are large sulfur consumers, have not as yet felt to any appreciable extent the betterment in business, with the result that shipments are still disappointing.

Superphosphate — Producers reduced quotations on run of the pile to $7.00 and 16 per cent material to $7.50, a reduction in each case of 50c a ton. Rumors were in the market that on sizable business these figures could be bettered. Sales were relatively small. Reports from the coast indicate sizable imports of Japanese material. Production of bulk superphosphate in June as reported to the Bureau of Census by 87 manufacturers operating 158 plants totaled 61,539 short tons, according to a preliminary estimate, against 86,200 tons in May. Production of base and mixed superphosphate was 191 tons against 1,620 tons in the preceding month. Stocks of bulk material on hand at the end of June totaled 857,170 tons against 857,096 at the close of the preceding month, and stocks of base and mixed goods were 275,297 tons against 281,227 tons.

Tin Salts — The strengthening in the metal market was reflected in higher prices for crystals, tetrachloride and stannate. Crystals at 25c and tetrachloride at 17.35c are new high levels for these products. The curtailment program of the international tin producers is now showing definite results and the statistical position of tin is the most favorable of any of the metals. The world's visible supply of tin increased 562 tons during September according to figures received by the National Metal Exchange. The total was 47,739 tons. Straits tin shipments for the month were 3,953 tons. The gain in the world's visible supply follows a decline by nearly 2,000 tons the preceding month.

FATS AND OILS

While trading was better in most items in September, buyers were still holding to a cautious attitude towards future commitments. Inquiries for spot deliveries were fair. Price trends were generally higher, but quotations fluctuated but slightly. Offerings were rather limited and aided in maintaining the firm position of most of the oils.

Fish Oils — The market was featured by the decline of 1c a gallon in crude menhadan on Sept. 22, when several tank cars changed hands at 10½c, f. o. b. Baltimore, which is the lowest price for this item in several years. Bids of 10c were reported rejected later in the month.

Animal Oils — Degras quotations were generally held at published figures. Lard buying was of a very conservative nature. Sales of neatsfoot were limited to small quantities. The decline in export demand for oleo was offset by improvement in domestic demand.

Vegetable Oils — Stocks of China wood in this country in the hands of importers and also consumers' supplies are thought to be relatively small. Any further upward swing in business is likely to bring about further strengthening of the price structure. During September trading was light both locally and on the Coast. In the primary market the improvement in rate of exchange did not result in any flood of offerings and cables from China indicate continued stability. Corn oil trading developed a steadier tone although little business was placed. Cocoanut oil held firm locally, but slight shading was reported from the Coast. Importation of vegetable oils during August were as follows:

	Pounds	*Value*
Edible oils—		
Olive, pkgs., less than 40 lbs	2,970,318	$303,084
Olive, other edible	2,504,781	218,367
Peanut	59,760	3,381
Other edible	858,052	22,767
Inedible oils—		
Chinawood	7,428,144	280,014
Coconut	15,697,911	459,207
Palm	21,479,769	575,078
Inedible, for industrial and manufacturing purposes— and manufacturing purposes—		
Olive, sulphured or foots	5,032,049	173,748
Olive, other inedible	608,471	43,592
Rapeseed, gallons	16,575	3,854
Sesame	80	24
Rapeseed, gallons	8,249	2,684
Linseed	840	49
Soybean	756	45
Perilla	394,000	10,202
Other, free	2,126,481	60,054
Other, dutiable	212,336	10,409

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

Of Chemical Markets, published monthly at Pittsfield, Mass., October 1, 1932.

State of New York, County of New York—ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Williams Haynes, who, having been duly sworn according to law, deposes and says that he is the Publisher of the Chemical Markets, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Williams Haynes, 25 Spruce St., New York, N. Y.; Business Manager, William F. George, 25 Spruce St., New York, N. Y.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Chemical Markets, Inc.; 25 Spruce St., New York, N. Y.; Williams Haynes, 25 Spruce St., New York, N. Y.; William F. George, 25 Spruce St., New York, N. Y.

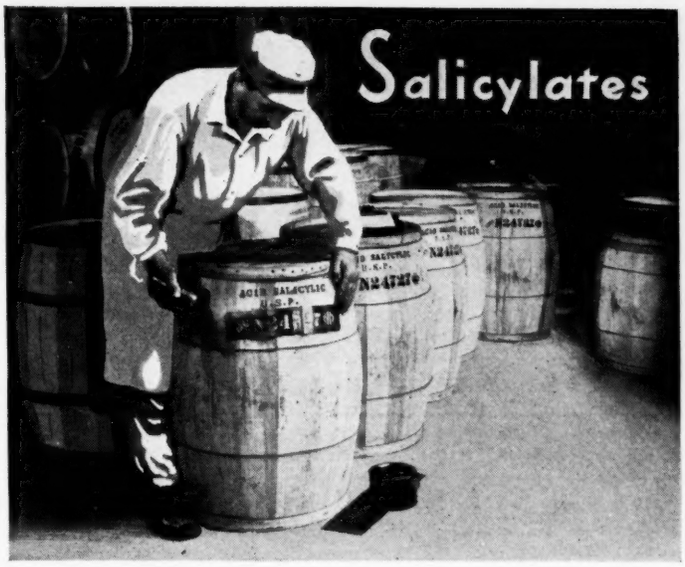
3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state). None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.)

Williams Haynes, Publisher.

Sworn to and subscribed before me this 22nd day of September, 1932. Thomas A. Cruger, Notary Public, N. Y. Co. Clerk's No. 55, N. Y. Reg. No. 3,024 Comm. Expires, March 1933.)



Acid Acetylsalicylic, U. S. P., Powder and Granulated, also Granulated containing 10% starch—(white, pink or green.)
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Acid Salicylic U. S. P., Powder.
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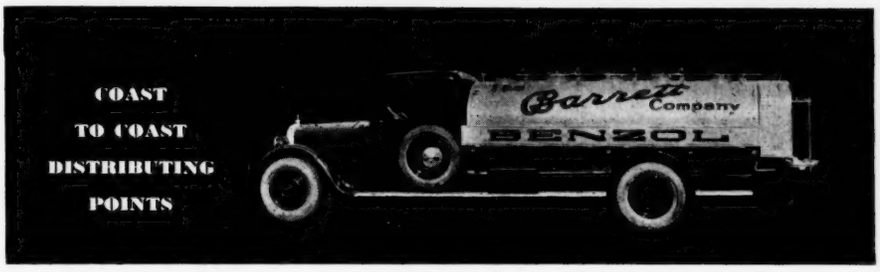

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CRUDE CRESYLIC ACID
95% Dark and 99% Straw Color
XYLENOLS
TAR ACID OILS
NAPHTHALENE
Crude, Refined Chipped, Flake and Ball
RUBBER SOFTENERS
CUMAR*
Para Coumarone-Indene Resin
BARRETAN*
PICKLING INHIBITORS
PYRIDINE
Denaturing and Commercial
FLOTATION OILS and REAGENTS
HYDROCARBON OIL
SHINGLE STAIN OIL
SPECIAL HEAVY OIL
HI-FLASH NAPHTHA

In evaporation range, boiling range, specific gravity and miscibility, Barrett Water-White Distillates offer a wide variety of quality solvents. All are uniform and acid-free. All are Barrett Standard.

If your plant is located within fifty or sixty miles of a city listed in this advertisement, take advantage of Barrett express tank-bus deliveries of Benzol Solvents. 'Phone your order.

The Barrett Company
40 Rector Street — **New York, N. Y.**

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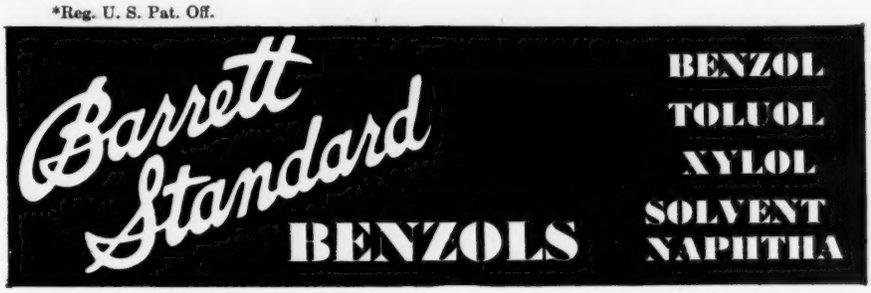

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1931 Average $1.404 - Jan. 1931 $1.283 - Sept. 1932 $1.60

	Current Market	1932 Low	1932 High	1931 Low	1931 High
Acetaldehyde, drs 1c-1 wks...lb.	.18½	.21	.18½	.21	.18½	.21
Acetaldol, 50 gal dr.....lb.	.27	.31	.27	.31	.27	.31
Acetamide.....lb.	.95	.35	.95	1.35	.95	1.35
Acetanilid, tech, 150 lb bbl...lb.	....	.26	.20	.26	.22	.23
Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.21	.25	.21	.25	.21	.25
Acetin, tech drums.....lb.	.30	.32	.30	.32	.30	.32
Acetone, tanks.....lb.	....	.10	...	.10	.10	.10½
Acetone Oil, bbls NY.....gal.	1.15	1.25	1.15	1.25	1.15	1.25
Acetyl Chloride, 100 lb cby...lb.	.55	.68	.55	.68	.55	.68
Acetylene Tetrachloride (see tetrachlorethane).....						
Acids						
Acid Abietic.....	.12	.12	.12	.12	.12	.12
Acetic, 28% 400 lb bbls c-1 wks .....100 lb.	2.65	2.75	2.40	2.75	2.40	2.60
Glacial, bbl c-1 wk....100 lb.	....	9.14	8.35	9.14	8.35	9.23
Glacial, tanks.....	....	8.89	8.10	8.89	8.10	8.98
Adipic.....	.72	.72	.72	.72	.72	.72
Anthranilic, refd, bbls.....lb.	.85	.95	.85	.95	.85	.95
Technical, bbls.....lb.	.65	.70	.65	.70	.65	.80
Battery, cbys.....100 lb.	1.60	2.25	1.60	2.25	1.60	2.25
Benzoic, tech, 100 lb bbls....lb.	.35	.45	.35	.45	.35	.45
Boric, powd, 250 lb. bbls.....lb.	.0425	.05	.0425	.07	.06½	.07¼
Broenner's, bbls.....lb.	1.20	1.25	1.20	1.25	1.20	1.25
Butyric, 100% basis cbys....lb.	.80	.85	.80	.85	.80	.85
Camphoric.....lb.	....	5.25	.....	5.25	.....	5.25
Chlorosulfonic, 1500 lb drums wks.....lb.	.04½	.05½	.04½	.05½	.04½	.05½
Chromic, 99½%, drs.....lb.	.11¾	.13¾	.11¾	.14½	.14½	.17
Chromotropic, 300 lb bbls....lb.	1.00	1.06	1.00	1.06	1.00	1.06
Citric, USP, crystals, 230 lb. bbls.....lb.	.29	.30	.29	.33½	.33½	.43
Cleve's, 250 lb bbls.....lb.	.52	.54	.52	.54	.52	.54
Cresylic, 95%, dark drs NY.gal.	.40	.41	.40	.47	.42	.60
97-99%, pale drs NY.....gal.	.45	.49	.45	.50	.49	.60
Formic, tech 90%, 140 lb. cby.....lb.	.10½	.12	.10½	.12	.10½	.12
Gallic, tech, bbls.....lb.	.60	.70	.60	.70	.60	.70
USP, bbls.....lb.	....	.74	.....	.74	.....	.74
Gamma, 225 lb bbls wks.....lb	.75	77	.75	.80	.77	.80
H, 225 lb bbls wks.....lb.	.60	.65	.60	.65	.60	.70
Hydriodic, USP, 10% soln cby lb.	.60	.61	.60	.67	.....	.67
Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.45	.48	.45	.48
Hydrochloric, CP, see Acid Muriatic.....						
Hydrocyanic, cylinders wks .lb.	.80	.90	.80	.90	.80	.90
Hydrofluoric, 30%, 400 lb bbls wks.....lb.	....	.06	.....	.06	.....	.06
Hydrofluosilicic, 35%, 400 lb. bbls wks.....lb.	.11	.12	.11	.12	.11	.12
Hypophosphorous, 30%, USP, demijohns .....lb.	.75	.80	.75	.85	.....	.85
Lactic, 22%, dark, 500 lb bbls lb.	.04	.04½	.04	.04½	.04	.04½
44%, light, 500 lb bbls.....lb.	.11½	.12	.11½	.12	.11½	.12
Laurent's, 250 lb bbls.... ...lb.	.36	.42	.36	.42	.36	.42
Linoleic.....	.16	.16	.16	.16	.16	16
Malic, powd, kegs.....lb.	.45	.60	.45	.60	.45	.60
Metanilic, 250 lb bbls.....lb.	.60	.65	.60	.65	.60	.65
Mixed Sulfuric - Nitric..... tanks wks.....N unit	.07	.07½	.07	.07½	.07	.07½
tanks wks.....S unit	.008	.01	.008	.01	.008	.01
Monochloroacetic, tech bbl...lb.	.20	.30	.20	.30	.20	.30
Monosulfonic, bbls.....lb.	1.55	1.60	1.55	1.70	1.65	1.70
Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	....	1.35	.....	1.35	.....	1.35
tanks, wks.....100 lb.	....	1.00	.....	1.00	.....	1.00
20 degrees, cbys wks...100 lb.	....	1.45	.....	1.45	.....	1.45
N & W, 250 lb bbls.....	.85	.95	.85	.95	.85	.95
Naphthionic, tech, 250 lb.....	.60	.65	.60	.65	.60	.65
Nitric, 36 deg, 135 lb cbys c-wks. .....100 lb.	....	5.00	.....	5.00	.....	5.00
40 deg, 135 lb cbys, c-1 wks.....100 lb.	....	6.00	.....	6.00	.....	6.00
Oxalic, 300 lb bbls wks NY....lb.	.11	.11¼	.11	.11¼	.10¾	.11½
Phosphoric 50%, U. S. P.....lb.	....	.14	.....	.14	.....	.14
Syrupy, USP, 70 lb drs....lb.	....	.14	.....	.14	.....	.14
Picramic, 300 lb bbls.....lb.	.65	.70	.65	.70	.65	.70
Picric, kegs.....lb.	.30	.50	.30	.50	.30	.50
Pyrogallic, crystals..... .....lb.	1.45	1.50	1.45	1.60	1.50	1.60
Salicylic, tech, 125 lb bbl.....lb.	.33	.37	.33	.37	.33	.37
Sulfanilic, 250 lb. bbls.....lb.	.14½	.15	.14½	.16	.15	.16
Sulfuric, 66 deg, 180 lb cbys 1c-1 wks.....100 lb.	1.60	1.95	1.60	1.95	1.60	1.95
tanks, wks, ton	....	15.00	.....	15.00	.....	15.00
1500 lb dr wks.....100 lb.	1.50	1.65	1.50	1.65	1.65	1.50
60°, 1500 lb dr wks....100 lb.	1.27½	1.42½	1.27½	1.42½	1.42½	1.27½
Oleum, 20%, 1500 lb. drs 1c-1 wks.....ton	....	18.50	.....	18.50	.....	18.50
40%, 1c-1 wks net.....ton	....	42.00	.....	42.00	.....	42.00
Tannic, tech, 300 lb bbls...lb.	.23	.40	.23	.40	.23	.40
Tartaric, USP, gran. powd, 300 lb bbls.....lb.	.22	.22½	.22	.25½	.25½	.29½
Tobias, 250 lb bbls.....lb.	.75	.80	.75	.85	.80	.85
Trichloroacetic bottles.....lb.	....	2.75	.....	2.75	.....	2.75
Kegs.....lb.	....	2.00	.....	2.00	.....	2.00
Tungstic, bbls.....lb.	1.40	1.70	1.40	1.70	1.40	1.70
Albumen, blood, 225 lb bbls...lb.	.35	.40	.35	.40	.38	.40
dark.....bbls., lb.	.10	.17	.10	.20	.12	20
Egg, edible .....lb.	....	.81	.75	.90	.55	.60
Technical, 200 lb cases...lb.	.62	.66	.62	.66	.48	.66
Vegetable, edible.....lb.	.60	.65	.60	.65	.60	.65
Technical.....lb.	.50	.55	.50	.55	.50	.55
Alcohol						
Alcohol Butyl, Normal, 50 gal drs c-1 wks.....lb.	....	.123	.123	.1595	.1495	.17½
Drums, 1-c-1 wks.....lb	....	.128	.128	.1645	.1545	.17¾
Tank cars wks.....lb.	....	.113	.113	.143	.143	.16¼
Amyl (from pentane) Tanks wks .....lb.	....	.176	.176	.203	203	.236
Diacetone, 50 gal drs del...gal.	1.42	1.60	1.42	1.60	1.42	1.60
Ethyl, USP, 190 pf, 50 gal. bbls.....gal.	2.56½	2.65	2.55	2.65	2.37	2.75
Anhydrous, drums ...gal.	.54	.58	.54	.58	.54	.60
No. 5, *188 pf, 50 gal. drs. drums extra.....gal.	....	.396*	.27	.396	.27	.44
Isopropyl, ref, gal drs.....gal.	.60	.65	.60	.65	.60	1.00
Propyl Normal, 50 gal dr..gal.	....	.75	.....	.75	.....	1.00
Aldehyde Ammonia, 100 gal drlb.	.80	.82	.80	.82	.80	.82
Alpha-Naphthol, crude, 300 lb. bbls.....lb.	.57	.58	.57	.65	.60	.65
Alpha-Naphthylamine, 350 lb. bbls.....lb.	.32	.34	.32	.34	.32	.34
Alum Ammonia, lump, 400 lb bbls, 1-c-1 wks.....100 lb.	3.00	3.25	3.00	3.25	3.00	3.50
Chrome, 500 lb casks, wks .....100 lb.	4.50	5.25	4.50	5.25	4.50	5.25
Potash, lump, 400 lb casks wks.....100 lb.	3.00	3.50	3.00	3.50	3.00	3.50
Soda, ground, 400 lb bbls wks.....100 lb	3.50	3.75	3.50	3.75	3 50	3.75
Aluminum Metal, c-1 NY.100 lb.	22.90	24.30	22.90	24.30	22 90	24.30
Chloride Anhydrous .....lb.	.05	.09	.05	.09	05	.09
Hydrate, 96%, light, 90 lb. bbls.....lb.	.15	.16½	.15	.17	.16	.17
Stearate, 100 lb bbls.....lb.	.15	.17	.15	.21	.18	.22
Sulfate, Iron, free, bags c-1 wks .....100 lb.	1.90	1.95	1.90	1.95	1.90	1.95
Coml, bags c-1 wks .100 lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminoazobenzene, 110 lb kegs lb.	....	1.15	.....	1.15	.....	1.15
Ammonia						
Ammonia anhydrous Com. tanks	....	.05¾	.....	.05¾	.....	.05¾
Ammonia, anhyd. 100 lb cyl...lb.	.15½	.15½	.15½	.15½	.15½	.15½
Water, 26°, 800 lb dr del...lb.	.02½	.03	.02½	.03	.02½	.03½
Ammonia, aqua 26° tanks....	....	.02¾	.....	.02¾	.02½	.02¾
Acetate .....lb.	.26	.33	.26	.39	.28	.39
Bicarbonate, bbls., f.o.b. plant .....100 lb.	....	5.15	.....	5.15	.....	5.15
Bifluoride, 300 lb bbls.....lb.	.14½	.17	.14½	.22	.21	.22
Carbonate, tech, 500 lb cs..lb.	.08	.12	.08	.12	.09	.12
Chloride, white, 100 lb. bbls wks .....100 lb.	4.50	5.15	4.45	5.15	4.45	5.15
Gray, 250 lb bbls wks...lb.	5.25	5.75	5.25	5.75	5.25	5.75
Lump, 500 lb cks spot...lb.	.10½	.11	.10½	.11½	.11	.11½
Lactate, 500 lb bbls.....lb.	.15	.16	.15	.16	.15	.16
Ammonium Linoleate.....lb.	....	.11	.11	.15	.15	.....
Nitrate, tech, casks.....lb.	.06	.10	.06	.10	.06	.10
Persulfate, 112 lb kegs.....lb.	.20	.22½	.20	.27½	.25	.30
Phosphate, tech, powd, 325 lb. bbls.....lb.	.08½	.11½	.08½	.12	.11½	.12
Sulfate, bulk c-1.....100 lb.	..	1.02	.90	1.40	1.10	1.80
Southern points.....100 lb.	....	1.02	.90	1.40	1.25	1.75
Nitrate, 26% nitrogen 31.6% ammonia imported bags c.i.f.....ton	34.60	35.00	34.60	35.00	34.60	35.00
Sulfocyanide, kegs.....lb.	.36	.48	.36	.48	.36	.48
Amyl Acetate, (from pentane) Tanks.....lb.	....	.157	.157	.17½	.16	.222
Tech., drs.....lb.	.17½	.18	.17½	.18	.16½	.236

Cellulose Acetate
Uniformity and Stability

Acetic Anhydride
90/95%

Anhydrous Sodium Acetate

Cresylic Acid
Pale 97/99%

Casein
for all purposes

PLASTICIZERS
for
Cellulose Acetate and Nitrocellulose
in
Lacquers, Dopes and Plastics
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Diethyl Phthalate
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Church & Dwight, Inc.
Established 1846
80 MAIDEN LANE NEW YORK

Bicarbonate of Soda
Sal Soda
Monohydrate of Soda
Standard Quality

	Current Market	1932 Low	1932 High	1931 Low	1931 High
Amyl Alcohol, see Fusel Oil					
Furoate, 1 lb tins lb.	....	5.00	.....	5.00	.....	5.00
Aniline Oil, 960 lb drs & tks. lb.	.14½	.16	.14½	.16	.14½	.16
Annatto, fine lb.	.34	.37	.34	.37	.34	.37
Anthraquinone, sublimed, 125 lb. bbls lb.	....	.45	.45	.55	.50	.55
Antimony, metal slabs, ton lots lb.	.05¾	.05½	.05	.06½	.06¾	.07½
Needle, powd, bbls lb.	.07	.08	.08½	.09	.08¾	.09
Chloride, soln (butter of) cbys lb.	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls lb.	.07½	.08¾	.07½	.08¾	.08¾	.08¾
Salt, 63% to 65%, tins lb.	.20	.23	.20	.24	.22	.24
Sulfuret, golden, bbls lb.	.16	.20	.16	.20	.16	.20
Vermillion, bbls lb.	.38	.42	.38	.42	.38	.42
Archil, conc, 600 lb bbls lb.	.20	.21	.17	.21	.17	19
Double, 600 lb bbls lb.	.16	.17	.16	.17	.12	.14
Triple, 600 lb bbls lb.	.16	.17	.16	.17	.12	.14
Argols, 80%, casks lb.	.12½	.13	.12½	.13	.....	.18¾
Crude, 30%, casks lb.	.07	.07½	.07	.07½	.07	.08
Aroclors, wks lb.	.18	.30	.18	.40	.20	.40
Arsenic, Red. 224 lb kegs, cs. lb.	.09¾	.10	.09¾	.10	.09¾	.10
White, 112 lb kegs lb.	.04	.05	.04	.05	.03¾	.05
Asbestine, c-1 wks ton	.....	15.00	.....	15.00	.....	15.00

Barium

Barium Carbonate, 200 lb bags wks ton	47.00	57.00	47.00	57.00	56.50	60.00
Chlorate, 112 lb kegs NY lb.	.13¼	.14¾	.13¾	.15	.14	.15
Chloride, 600 lb bbl wks ton	63.00	69.00	63.00	69.00	63.00	69.00
Dioxide, 88%, 690 lb drs lb.	.11	.13	.11	.13	.12	.13
Hydrate, 500 lb bbls lb.	.04½	.05½	.04½	.05½	.04½	.05½
Nitrate, 700 lb casks lb.	.07	.07½	.07	.08	.07½	.08¼
Barytes, Floated, 350 lb bbls wks ton	23.00	24.00	23.00	24.00	23.00	24.00
Bauxite, bulk, mines ton	5.00	6.00	5.00	6.00	5.00	8.00
Beeswax, Yellow, crude bags lb.	.14½	.15	.14½	.24	.22	.31
Refined, cases lb.	.20	.21	.20	.28	.25	.37
White, cases lb.	.30	.32	.30	.36	.34	.36
Benzaldehyde, technical, 945 lb. drums wks lb.	.60	.65	.60	.65	.60	.65
Benzene, 90%, Industrial, 8000 gal tanks wks gal.	.....	.20	.....	.20	.18	.21
Ind. Pure, tanks works gal.	.....	.20	.....	.20	.18	.21
Benzidine Base, dry, 250 lb. bbls lb.	.65	.67	.65	.67	.65	.67
Benzoyl, Chloride, 500 lb drs lb.	.40	.45	.40	.47	.45	.47
Benzyl Chloride, tech drs lb.	.....	.30	.....	.30	.....	.30
Beta-Naphthol, 250 lb bbl wk lb.	.....	.22	.....	.22	.22	.24
Naphthylamine, sublimed, 200 lb bbls lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls lb.	.53	.58	.53	.58	.53	.65
Blanc Fixe, 400 lb bbls wks ton	60.00	75.00	60.00	80.00	75.00	90.00
Bleaching Powder, 800 lb drs c-1 wks contract 100 lb.	1.75	2.00	1.75	2.00	1.75	2.35
Blood, Dried, fob, NY Unit	1.65	1.70	1.20	1.90	1.65	3.00
Chicago Unit	1.50	1.60	1.50	1.60	1.50	2.35
S. American shipt Unit	.....	2.00	2.00	2.25	2.00	3.20
Blues, Bronze Chinese Milori Prussian Soluble lb.	.....	.35	.....	.35	.....	.35
Bone, raw, Chicago ton	.....	22.00	20.00	22.00	21.00	32.00
Bone Ash, 100 lb kegs lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls lb.	.06	.08¼	.05½	.08¼	.05½	.08½
Meal, 3% & 50%, Imp ton	.....	23.00	21.00	23.00	21.00	31.00
Borax, bags lb.	.018	.02	.018	.03¼	.02½	.03¼
Bordeaux, Mixture, 16% pwd. lb.	.11½	.13	.11½	.13	.11½	.13
Paste, bbls lb.	.11½	.13	.11½	.13	.11½	.13
Brazilwood, sticks, shpmt lb.	26.00	28.00	26.00	28.00	26.00	28.00
Bromine, cases lb.	.36	.43	.36	.43	.36	.43
Bronze, Aluminum, powd blk. lb.	.60	1.20	.60	1.20	.60	1.20
Gold bulk lb.	.55	1.25	.55	1.25	.55	1.25
Butanes, com 16.32° group 3 tanks lb.	....	.04	.....	.....	.....	.....
Butyl, Acetate, normal drs lb.	.134	.139	.134	.166	.161	.175
Tank, wks lb.	.....	.124	.124	.143	.143	.175
Aldehyde, 50 gal drs wks lb.	.31½	.36	.31½	.36	.34	.44
Carbitol see Diethylene Glycol Mono (Butyl Ether)	.....	.....	.....	.....	.....	.....
Cellosolve (see Ethylene glycol mono butyl ether)	.....	.....	.....	.....	.....	.....
Furoate, tech., 50 gal. dr. lb.	.....	.50	.....	.50	.....	.50
Propionate, drs lb.	.20	.22	.20	.25	.22	.25
Stearate, 50 gal drs. lb.	.25	.25½	.25	.25½	.25	.30
Tartrate, drs lb.	.55	.60	.55	.60	.55	.60
Cadmium, Sulfide, boxes lb.	.65	.90	.65	.90	.65	.90
Calcium, Acetate, 150 lb bags c-1 100 lb.	.....	2.50	2.00	2.50	.....	2.00
Arsenate, 100 lb bbls c-1 wks lb.	.05½	.06	.05½	.06	.06	.09
Carbide, drs lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bags c-1 lb.	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, Flake, 375 lb drs c-1 wks ton	.....	21.00	.....	21.00	21.00	22.75
Solid, 650 lb drs c-1 fob wks ton	.....	18.00	.....	18.00	18.00	20.00
Nitrate, 100 lb bags ton	34.00	35.00	34.00	35.00	34.00	43.00
Peroxide, 100 lb drs lb.	.....	1.25	....	1.25	....	1.25
Phosphate, tech, 450 lb bbls lb.	.07½	.08	.07½	.08¾	.08	.08¾
Stearate, 100 lb. bbls lb.	.16	.17	.16	.18	.17	.22
Calurea, bags S. points c.i.f. ton	.....	88.65	.....	88.65	.....	88.65
Camwood, Bark, ground bbls. lb.	.16	.18	.16	.18	.....	.18
Candelilla Wax, bags lb.	....	.11	.10	.14	.13	.15
Carbitol, (See Diethylene Glycol Mono Ethyl Ether)	.....	.....	.....	.....	.....	.....
Carbon, Decolorizing, 40 lb bags c-1 lb.	.08	.15	.08	.15	.08	.15
Black, 100-300 lb cases 1c-1 NY lb.	.06	.12	.06	.12	.06	.12
Bisulfide, 500 lb drs 1c-1 NY lb.	.05½	.06	.05½	.06	.05½	.06
Dioxide, Liq. 20-25 lb cyl. lb.	.....	.06	.....	.06	.....	.06
Tetrachloride, 1400 lb drs delivered lb.	.06½	.07	.06¼	.07	.06¼	.07
Carnauba Wax, Flor, bags lb.	.25	.26	.25	.28	.26	.28
No. 1 Yellow, bags lb.	....	.22½	.21	.24	.23	.40
No. 2 N Country, bags lb.	....	.16	.13	.16	.15	.23
No. 2 Regular, bags lb.	....	.21½	.20	.22	.21	.23
No. 3 N. C. lb.	.12	.12½	.11	.12	.11	.11
No. 3 Chalky lb.	.12	.12½	.11	.12	.11	.13½
Casein, Standard, Domestic, ground lb.	.....	.06½	.04¾	.07½	.06	.10
Cellosolve (see Ethylene glycol mono ethyl ether)						
Acetate (see Ethylene glycol mono ethyl ether acetate)						
Celluloid, Scraps, Ivory cs lb.	.13	.15	.13	.15	.13	.15
Shell, cases lb.	.18	.20	.18	.20	.18	.20
Transparent, cases lb.	.....	.15	.....	.15	.....	.15
Cellulose, Acetate, 50 lb kegs lb.	.80	.90	.80	.90	.80	1.25
Chalk, dropped, 175 lb bbls lb.	.03	.03¾	.03	.03¾	.03	.03¾
Precip, heavy, 560 lb cks lb.	.02	.03½	.02	.03½	.02	.03½
Light, 250 lb casks lb.	.02½	.03½	.02½	.03½	.02½	.03½
Charcoal, Hardwood, lump, bulk wks bu.	.18	.19	.18	.19	.18	.19
Willow, powd, 100 lb bbl. wks lb.	.06	.06¼	.06	.06¼	.06	.06¼
Wood, powd, 100 lb bbls lb.	.04	.05	.04	.05	.04	.05
Chestnut, clarified bbls wks lb.	.01¾	.02	.01¾	.02	.01¾	.03
25% tks wks lb.	.01¾	.02½	.01¾	.02½	.01¾	.02½
Powd, 60%, 100 lb bgs wks lb.	.....	.04½	.....	.04½	.....	.04½
Powd, decolorized bgs wks lb.	.04½	.05	.04½	.06	.05½	.06
China Clay, lump, blk mines ton	8.00	9.00	8.00	9.00	8.00	9.00
Powdered, bbls lb.	.01	.02	.01	.02	.01¼	.02
Pulverized, bbls wks ton	10.00	12.00	10.00	12.00	10.00	12.00
Imported, lump, bulk ton	15.00	25.00	15.00	25.00	15.00	25.00

Chlorine

Chlorine, cyls 1c-1 wks contract lb.	.07	.08½	.07	.08½	.07	.08½
cyls, cl wks., contract lb.	.04	.04½	.04	.04½	.04	.04½
Liq tank or multi-car lot cyls wks contract 100 lb.	1.55	1.75	1.55	1.75	1.75	1.80
Chlorobenzene, Mono, 100 lb. drs 1c-1 wks lb.	.06	.07½	.06	.10½	.10	.10½
Chloroform, tech, 1000 lb drs. lb.	.15	.16	.15	.16	.15	.16
Chloropicrin, comml cyls lb.	1.00	1.35	1.00	1.35	1.00	1.35
Chrome, Green, CP lb.	.28	.29	.28	.29	.26	.29
Commercial lb.	.06½	.10	.06½	.11	.06½	.11
Yellow lb.	.15	.16	.15	.18	.16	.18
Chromium, Acetate, 8% Chrome bbls lb.	.04½	.05¾	.04¼	.05¾	.04¼	.05¾
20° soln, 400 lb bbls lb.	.....	.05½	.....	.05½	.....	.05½
Fluoride, powd, 400 lb bbl. lb.	.27	.28	.27	.28	.27	.28
Oxide, green, bbls lb.	.28	.33	.28	.35½	.34½	.35½
Coal tar, bbls bbl.	10.00	10.50	10.00	10.50	10.00	10.50
Cobalt Oxide, black, bags lb.	1.25	1 35	1.25	1.45	1.35	2.22
Cochineal, gray or black bag. lb.	.45	.49	.52	.57	.52	.57
Teneriffe silver, bags lb.	.46	.49	.46	.57	.55	.57
Copper, metal, electrol. 100 lb.	....	6.25	5.32	7.25	6.25	10.36
Carbonate, 400 lb bbls lb.	.07	.15½	.07	.16½	.08½	.16½
Chloride, 250 lb bbls lb.	.17	.18	.17	.25	.22	.25
Cyanide, 100 lb drs lb.	.39	.40	.39	.40	.39	.42
Oxide, red, 100 lb bbls lb.	.15	.16	.15	.16	.15	.18
Sub-acetate verdigris, 400 lb bbls lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls c-1 wks 100 lb.	.....	3.00	2.75	3.10	3.10	4.95
Copperas, crys and sugar bulk c-1 wks bags ton	14.00	14.50	14.00	14.50	13.00	14.00
Cotton, Soluble, wet, 100 lb bbls lb.	.40	.42	.40	.42	.40	.42
Cottonseed, S. E. bulk c-1 ton	.....	26.50	.....	26.50	.....	26.50
Meal S. E. bulk ton	.....	.....	.....	.....	.....	.....
7% Amm., bags mills ton	13.25	38.00	13.25	38.00	13.25	38.00
Cream Tartar, USP, 300 lb. bbls lb.	.17	.17½	.17	.20½	.20½	.24½
Creosote, USP, 42 lb cbys lb.	.40	.42	.40	.42	.40	.42
Oil, Grade 1 tanks gal.	.11	.12	.11	12½	.11½	.14
Grade 2 gal.	.10	.11	.10	.11½	.10½	.12
Grade 3 gal.	.09	.11	.09	.11½	.10½	.12
Cresol, USP, drums lb.	.10½	.11	.10½	.11	.10½	.17
Crotonaldehyde, 50 gal dr. lb.	.32	.36	.32	.36	.32	.36
Cudbear, English lb.	.16	.17	.16	.17	.16	.17
Cutch, Rangoon, 100 lb bales lb.	.08¾	.09	.08¾	.12	.10	.13
Borneo, Solid, 100 lb bale lb.	.05	06	.05	.07	.05½	.08½
Cyanamide, bags c-1 frt allowed Ammonia unit	.....	.97½	.....	.97½	.97½	.....
Dextrin, corn, 140 lb bags. 100 lb.	3.24	3.45	3.24	3.67	3.47	4.02
White, 140 lb bags. 100 lb.	3.19	3.37	3.19	3.37	3.37	4.02
Potato Yellow, 220 lb bgs. lb.	.08	.09	.08	.09	.08	.09
White, 220 lb bags 1c-1. lb.	.08	.09	.08	.09	.08	.09
Tapioca, 200 lb bags 1c-1. lb.	.07	.08	.07	.08¾	.08¼	.08¾
Diamylphthalate, drs wks. gal.	.....	3.80	.....	3.80	.....	3.80
Dianisidine, barrels lb.	2.35	2.70	2.35	2.70	2.35	2.70
Dibutylphthalate, wks lb.	.218	.22	.218	.23½	.228	.28
Dibutyltartrate, 50 gal drs lb.	.29½	.31½	.29½	.31½	.29½	.31½
Dichloroethylether, 50 gal drs lb.	.....	.06	.....	.06	.....	.06

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THE determination of nickel with dimethylglyoxime is the standard gravimetric method. This procedure is well known and widely used where relatively large amounts of nickel are present, as in steels and alloys.

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Details of either method will be supplied on request.

EASTMAN KODAK COMPANY

EK

Chemical Sales Division
ROCHESTER, NEW YORK

		Current Market	1932 Low	1932 High	1931 Low	1931 High
Dichloromethane, drs wks	lb.	.55	.55	.65	.55	.65
Diethylamine, 400 lb drs	lb.	2.75	2.75	3.00	2.75	3.00
Diethylcarbonate, drs	gal.	1.85	1.85	1.90	1.85	1.90
Diethylaniline, 850 lb drs	lb.	.55	.55	.60	.55	.60
Diethyleneglycol, drs	lb.	.14	.14	.16	.14	.16
Mono ethyl ether, drs	lb.	.15	.15	.16	.15	.16
Mono butyl ether, drs	lb.	.24	.24	.30	.24	.30
Diethylene oxide, 50 gal drs	lb.	.26	.27	.....	.....	.....
Diethylorthotoluidin, drs	lb.	.64	.64	.67	.64	.67
Diethyl phthalate, 1000 lb. drums	lb.	.23	.23	.26	.23	.26
Diethylsulfate, technical, 50 gal drums	lb.	...	.30	.35	.30	.35
Dimethylamine, 400 lb drs	lb.	.....	2.62	.....	2.62	.....
Dimethylaniline, 340 lb drs	lb.	.25	.25	.27	.25	.28
Dimethylsulfate, 100 lb drs	lb.	.45	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls	lb.	.15	.15	.16	.15	.16½
Dintrochlorobenzene, 400 lb bbls	lb.	.13	.13	.15	.13	.15
Dinitronaphthalene, 350 lb bbls	lb.	.34	.34	.37	.34	.37
Dinitrophenol, 350 lb bbls	lb.	.23	.23	.24	.29	.30
Dinitrotoluene, 300 lb bbls	lb.	.16	.16	.17	.16	.17
Diorthotolyguanidine, 275 lb bbls wks	lb.	.42	.42	.46	.42	.46
Dioxan (See Diethylene Oxide)	.....	.....	.....	.....	.....	.....
Diphenyl	lb.	.20	.20	.40	.20	.40
Diphenylamine	lb.	.34	.34	.37	.37	.38
Diphenylguanidine, 100 lb bbl	lb.	.30	.30	.35	.30	.35
Dip Oil, 25%, drums	lb.	.26	.26	.30	.26	.30
Divi Divi pods, bgs shipmt	ton	.....	26.00	30.00	28.00	35.00
Extract	lb.	.05	.05	.05½	.05	.05½
Egg Yolk, 200 lb cases	lb.	....	.40	.52	.45	.58
Epsom Salt, tech, 300 lb bbls c-1 NY	100 lb.	1.70	1.70	1.90	1.70	1.90
Ether, USP anaesthesia 55 lb. drs.	lb.	.22	.22	.23	.23	.28
USP (Conc)	lb.	.09	.09	.10	.09	.10
Ethyl Acetate, 85% Ester, tanks	lb.	.....	.09	.....	.09	.06½ .09
drums	lb.	.....	.10	.....	.10	.08 .10
Anhydrous, tanks	lb.	.....	.10	.....	.10	.075 .119
drums	lb.	.....	.10½	.....	.10½	.085 .121
Acetoacetate, 50 gal drs	lb.	.65	.68	.65	.68	.65 .68
Benzylaniline, 300 lb drs	lb.	.88	.90	.88	.90	.88 .90
Bromide, tech, drums	lb.	.50	.55	.50	.55	.50 .55
Carbonate, 90%, 50 gal drs	gal.	1.85	1.90	1.85	1.90	1.85 1.90
Chloride, 200 lb drums	lb.	.....	.22	.....	.22	..... .22
Chlorocarbonate, cbys	lb.	.....	.30	.....	.30	..... .30
Ether, Absolute, 50 gal drs	lb.	.50	.52	.50	.52	.50 .52
Furoate, 1 lb tins	lb.	.....	5.00	.....	5.00	..... 5.00
Lactate, drums works	lb.	.25	.29	.25	.29	.25 .29
Methyl Ketone, 50 gal drs	lb.	.....	.30	.....	.30	..... .30
Oxalate, drums works	lb.	.37½	.55	.37½	.55	.45 .55
Oxybutyrate, 50 gal drs wks	lb.	.....	.30½	.....	.30½	..... .30½
Ethylene Dibromide, 60 lb dr.	lb.	.65	.70	.65	.70	..... .70
Chlorhydrin, 40%, 10 gal cbys. chloro, cont	lb.	.75	.85	.75	.85	.75 .85
Dichloride, 50 gal drums	lb.	.05	.07	.05	.07	.05 .07
Glycol, 50 gal drs wks	lb.	.25	.28	.25	.28	.25 .28
Mono Butyl Ether drs wks	.....	.....	.24	.....	.24	.24 .27
Mono Ethyl Ether drs wks	.17	.20	.17	.20	.17	.20
Mono Ethyl Ether Acetate dr. wks	.19½	.23	.19½	.23	.19½	.23
Mono Methyl Ether, drs	lb.	.21	.23	.21	.23	.21 .23
Stearate	.....	.18	.18	.18	.18	.18 .18
Oxide, cyl	lb.	.....	2.00	.....	2.00	..... 2.00
Ethylidenaniline	lb.	.45	.47½	.45	.47½	.45 .47½
Feldspar, bulk	ton	15.00	20.00	15.00	20.00	15.00 20.00
Powdered, bulk works	ton	15.00	21.00	15.00	21.00	15.00 21.00
Ferric Chloride, tech, crystal 475 lb bbls	lb.	.04½	.07	.04½	.07½	.05 .07½
Fish Scrap, dried, wks	unit	.....	1.50*	1.60	3.00	3.00 4.25
Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis	unit	.....	1.40†	1.40	2.40	..... 2.40
Fluorspar, 98%, bags		35.00	38.50	35.00	46.00	41.00 46.00

*& 10; †& 50

Formaldehyde

Formaldehyde, aniline, 100 lb. drums	lb.	.37½	.42	.37½	.42	.37½	.42
USP, 400 lb bbls wks	lb.	.06	.07½	.06	.07½	.06	.07½
Fossil Flour	lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, bulk, mines	ton	15.00	20.00	15.00	20.00	15.00	20.00
Imp. powd c-1 bags	ton	24.00	30.00	24.00	30.00	24.00	30.00
Furfural (tech.) drums wks,	lb.	.....	.10	.....	.10	.....	.10
Furfuramide (tech) 100 lb dr.	lb.	.....	.30	.....	.30	.....	.30
Furfuryl Acetate, 1 lb tins	lb.	.....	5.00	.....	5.00	.....	5.00
Alcohol, (tech) 100 lb dr	lb.	.....	.50	.....	.50	.....	.50
Furoic Acid (tech) 100 lb dr.	lb.	.....	.50	.....	.50	.....	.50
Fusel Oil, 10% impurities	gal.	1.25	1.35	1.25	1.35	.....	1.35
Fustic, chips	lb.	.04	.05	.04	.05	.04	.05
Crystals, 100 lb boxes	lb.	.18	.20	.18	.20	.18	.22
Liquid 50°, 600 lb bbls	lb.	.07	.08	.07	.08	.07	.10
Solid, 50 lb boxes	lb.	.14	.16	.14	.16	.14	.16
Sticks	ton	25.00	26.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls	lb.	.42	.43	.42	.50	.45	.50
Gall Extract	lb.	.18	.20	.18	.20	.18	.20
Gambier, common 200 lb cs.	lb.	.06½	.07	.06½	.07	.06½	.07
25% liquid, 450 lb bbls	lb.	.08	.10	.08	.10	.08	.10
Singapore cubes, 150 lb bg.	lb.	.07¼	.08	.07¼	.09	.09½	.09
Gelatin, tech, 100 lb cases	lb.	.45	.50	.45	.50	.45	.50
Glauber's Salt, tech, c-1 wks.	100 lb.	1.00	1.70	1.00	1.70	1.00	1.70
Glucose (grape sugar) dry 70-80° bags c-1 NY	100 lb.	3.24	3.34	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb bags	100 lb.	.....	3.14	.....	3.14	.....	3.14
Glue, medium white, bbls	lb.	.15½	.20	.15½	.20	.16	.24
Pure white, bbls	lb.	.18	.20	.18	.27	.20	.26
Glycerin, CP, 550 lb drs	lb.	.09¾	.10	.09¾	.11½	.11½	.14½
Dynamite, 100 lb drs	lb.	.07¼	.07½	.07¼	.09¾	.09	.12½
Saponification, tanks	lb.	....	.05	.04½	.06¼	.06	.07½
Soap Lye, tanks	lb.	.....	.04⅜	.03½	.05	.04¼	.07
Graphite, crude, 220 lb bgs	ton	12.00	23.00	12.00	35.00	15.00	35.00
Flake, 500 lb bbls	lb.	.05	.06	.05	.09	.06	.09

Gums

Gum Accroides, Red, coarse and fine 140-150 lb bags	lb.	.03½	.04½	.03¾	.04½	.03¾	.04½
Powd, 150 lb bags	lb.	.06	.06½	.06	.06½	.06	.06½
Yellow, 150-200 lb bags	lb.	.18	.20	.18	.20	.18	.20
Animi (Zanzibar) bean & pea 250 lb cases	lb.	.35	.40	.35	.40	.35	.40
Glassy, 250 lb cases	lb.	.50	.55	.50	.55	.50	.55
Asphaltum, Barbadoes (Manjak) 200 lb bags	lb.	.04	.05	.04	.06	.04½	.12
Egyptian, 200 lb cases	lb.	.13	.15	.13	.15	.13	.17
Gilsonite Selects, 200 lb bags	ton	30.50	32.90	30.50	32.90	30.50	32.90
Damar Batavia standard 136, lb. cases	lb.	.08½	.09	.08½	.09	.08½	.13
Batavia Dust, 160 lb bags	lb.	.04	.05	.04	.05½	.05¼	.06
E Seeds, 136 lb cases	lb.	.05½	.06	.05½	.06½	.07	.08
F Splinters, 136 lb cases and bags	lb.	.05½	.06	.05½	.06	.06½	.07½
Singapore, No. 1, 224 lb cases	lb.	.10½	.11	.10½	.11	.10½	.15
No. 2, 224 lb cases	lb.	.06	.07	.06	.07½	.07	.10
No. 3, 180 lb bags	lb.	.04½	.05	.04½	.05	.05	.06
Benzoin Sumatra, U. S. P. 120 lb. cases	lb.	....	.19	.19	.22	.23	.34
Copal Congo, 112 lb bags, clean opaque	lb.	.16½	.17	.16½	.17	.16	.17
Dark, amber	lb.	.06	.07	.06	.07	.06½	.07½
Light, amber	lb.	.08	.08½	.08	.09	.08	.14
Water, white	lb.	.37	.45	.37	.45	.37	.45
Mastic	lb.	.34	.36	.34	.40	.42	.58
Manila 180-190 lb baskets							
Loba A	lb.	.09	.10	.09	.11	.11	.13
Loba B	lb.	.08	.08½	.08	.08½	.09	.10½
Loba C	lb.	.07	.08	.07	.08	.08½	.10
M A Sorts	lb.	.04½	.05	.04½	.05	.04½	.06½
D B B Chips	lb.	.05	.06	.05	.06½	.05½	.08
East Indies chips, 180 lb bags	lb.	.04½	.05	.04½	.05½	.05	.05½
Pale bold, 224 lb cs.	lb.	.12½	.14	.12½	.16	.15½	.16
Pale nubs, 180 lb bags	lb.	.06½	.07	.06½	.08½	.08	.09
Pontianak, 224 lb cases							
Bold gen No. 1	lb.	.14	.15	.14	.16	.16	.17
Gen. chips spot	lb.	.05	.06	.05	.08	.07	.08½
Elemi, No. 1, 80-85 lb cs.	lb.	.09	.09½	.09	.09½	.10	.12
No. 2, 80-85 lb cases	lb.	.08½	.09	.08½	.09	.09½	.11½
No. 3, 80-85 lb cases	lb.	.08	.08½	.08	.08½	.08½	.11
Kauri, 224-226 lb cases No. 1	lb.	.20	.25	.20	.42	.42	.50
No. 2 fair pale	lb.	.20	.25	.20	.30	.24	.29
Brown Chips, 224-226 lb. cases	lb.	.10	.12	.10	.12	.10	.12
Bush Chips, 224-226 lb. cases	lb.	.22	.24	.22	.24	.28	.34
Pale Chips, 224-226 lb cases	lb.	.11	.14	.11	.14	.19	.22
Sandarac, prime quality, 200 lb bags & 300 lb casks	lb.	.23¼	.23½	.23	.24	.18	.22
Helium, 1 lit. bot	lit.	.....	25.00	.....	25.00	.....	25.00
Hematine crystals, 400 lb bbls	lb.	.10	.18	.10	.18	.14	.18
Paste, 500 bbls	lb.	.....	.11	.....	.11	.....	.11
Hemlock 25%, 600 lb bbls wks	lb.	.03½	.04½	.03	.04½	.03	.03½
Bark	ton	.....	16.00	.....	16.00	.....	16.00
Hexalene, 50 gal drs wks	lb.	.....	.30	.30	.40	.40	.60
Hexamethylenetetramine, drs	lb.	.46	.47	.46	.47	.46	.50
Hoof Meal, f.o.b. Chicago	unit	.80	.90	.80	1.35	1.35	2.50
South Amer. to arrive	unit	1.25	1.45	1.25	1.65	1.80	2.70
Hydrogen Peroxide, 100 vol, 140 lb cbys	lb.	.20	.21	.20	.21	.21	.24
Hydroxyamine Hydrochloride	lb.	.....	3.15	.....	3.15	.....	3.15
Hypernic, 51°, 600 lb bbls	lb.	.11	.12	.11	.12	.11	.15

Indigo

Indigo Madras, bbls	lb.	1.25	1.30	1.25	1.30	1.25	1.30
20% paste, drums	lb.	.15	.18	.15	.18	.15	.18
Synthetic, liquid	lb.	.....	.12	.....	.12	.....	.12
Iron Chloride. see Ferric or Ferrous							
Iron Nitrate, kegs	lb.	.09	.10	.09	.10	.09	.10
Coml, bbls	100 lb.	2.50	3.25	2.50	3.25	2.50	3.25
Oxide, English	lb.	.04	.10	.04	.10	.10	.12
Red, Spanish	lb.	.02	.02½	.02	.03¼	.02½	.03½
Isopropyl Acetate, 50 gal drs	gal.	.85	.90	.85	.90	.85	.90
Japan Wax, 224 lb cases	lb.	.....	.06¾	.07	.09	.07½	.11
Kieselguhr, 95 lb bgs NY							
Brown	ton	60.00	70.00	60.00	70.00	60.00	70.00
Lead Acetate, bbls wks	100 lb.	9.00	9.50	9.00	10.00	9.50	11.00
White crystals, 500 lb bbls wks	100 lb.	10.00	10.50	10.00	11.00	10.50	12.25
Arsenate, drs lc-1 wks	lb.	.09½	.13	.09½	.13	.10	.14
Dithiofuroate, 100 lb dr.	lb.	.....	1.00	.....	1.00	.....	1.00
Metal, c-1 NY	100 lb.	.....	3.25	2.70	3.75	3.75	4.60
Nitrate, 500 lb bbls wks	lb.	.10½	.14	.10½	.14	.12	.14
Oleate, bbls	lb.	.17½	.18	.17½	.18	.17½	.18

BARGAINS *in Brains* . . .

The advertising pages are full of price reductions; but the best bargains of these times are not in merchandise, but in MEN.

Readjustments to meet new conditions are to a large extent problems of Personnel. To executives in search of the Right Man, the American Trade Association Executives offers the free services of its Placement Committee.

Retrenchments in the trade association field have made available a number of exceptional men. Organizations which wish to draw upon this reserve of talent and experience are invited to consult this source. We can put you in touch with men of outstanding achievement in:

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45 East 17th Street, New York, N. Y. Telephone Algonquin 4-4460

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Acetone
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Acid Tartaric
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Calcium Acetate
Carbon Black "Crow Brand"
Cellulose Acetate
Decolorizing Carbons
Diacetone Alcohol
Formic Acid
Methyl Ethyl Ketone
Sodium Acetate
Sodium Sulphide
Tartar Emetic
Triphenyl Phosphate

R. W. Greeff & Co., Inc.
10 EAST 40th STREET :: NEW YORK CITY

TRISODIUM
DISODIUM
PHOSPHATES
Brilliant, Colorless Crystals

Use Bowker's Trisodium Phosphate for all industrial purposes. Crystals are of uniform size and sparkling white appearance.

The exceptional purity of Bowker's Disodium Phosphate insures satisfactory results in the delicate operation of silk weighting and finishing.

Bowker's Phosphates are also being successfully used in treating water for high-pressure steam generation.

BOWKER CHEMICAL CO.
419 Fourth Avenue, New York City

	Current Market	1932 Low	1932 High	1931 Low	1931 High
Lead Oxide Litharge, 500 lb. bbls. lb.	.05¾	.06	.05¼	.07	.06¼ .08
Red, 500 lb bbls wks. lb.	.06¾	.07	.06¼	.07	.06¼ .08¼
White, 500 lb bbls wks. lb.	.06¼	.07	.06¼	.07	.06¼ .08
Sulfate, 500 lb bbls wk. lb.	.05¾	.06	.05¾	.06	.05¾ .07
Leuna saltpetre, bags c.i.f. ton		Nom.		Nom.	57.60
S. points c.i.f. ton		Nom.		Nom.	57.90
Lime, ground stone bags. ton		4.50		4.50	4.50
Live, 325 lb bbls wks. 100 lb.		1.05		1.05	1.05
Lime Salts, see Calcium Salts					
Lime-Sulfur soln bbls. gal.	.15	.17	.15	.17	.15 .17
Lithopone, 400 lb bbls lc-l wks lb.	.04¾	.05	.04¾	.05	.04¾ .05
Logwood, 51°, 600 lb bbls. lb.	.05	.08	.05	.08	.07 .08
Chips, 150 lb bags. lb.	.03	.03½	.03	.03½	.03 .03½
Solid, 50 lb boxes. lb.	.08	.12½	.08	.12½	.12 .12½
Sticks. ton	24.00	26.00	24.00	26.00	24.00 26.00
Madder, Dutch. lb.	.22	.25	.22	.25	.22 .25
Magnesite, calc, 500 lb bbl. ton	50.00	60.00	50.00	60.00	50.00 60.00

Magnesium

Magnesium Carb, tech, 70 lb. bags NY. lb.	.05¾	.06	.05¾	.06½	.06	.06½
Chloride flake, 375 lb. drs c-l wks. ton	35.00	36.00	35.00	36.00	35.00	36.00
Imported shipment. ton	31.75	33.00	31.75	33.00	31.75	33.00
Fused, imp., 900 lb bbls NY ton		31.00		31.00		31.00
Fluosilicate, crys, 400 lb bbls wks. lb.	.10	10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb bbls lb.		.42		.42		.42
Heavy, 250 lb bbls. lb.		.50		.50		.50
Peroxide, 100 lb cs. lb.	1.00	1.25	1.00	1.25	1.00	1.25
Silicofluoride, bbls. lb.	.09¾	.10¼	.09¾	.10¼	.09¾	.10¼
Stearate, bbls. lb.	.24	.26	.24	.26	.24	.26
Manganese Borate, 30%, 200 lb bbls. lb.	.15	.16	.15	.19		.19
Chloride, 600 lb casks. lb.	.07	.08	.07	.08½	.07½	.08½
Dioxide, tech (peroxide) drs lb.	.03½	.06	.03½	.06	.03½	.06
Manganese Ore, cents per unit	.18	.23	.18	.23		
Sulfate, 550 lb drs NY. lb.	.07	.08	.07	.08	.07	.08
Mangrove 55%, 400 lb bbls. lb.		.04		.04	.03½	.04
Bark, African. ton	21.00	22.00	21.00	25.00	23.00	29.75
Marble Flour, bulk. ton	14.00	15.00	14.00	15.00	14.00	15.00
Mercurous chloride. lb.	.82	.87	.82	.93	.93	2.05
Mercury metal. 76 lb flask	47.00	48.00	47.00	74.50	64.00	106.00
Meta-nitro-aniline. lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-para-toluidine 200 lb. bbls. lb.	1.40	1.55	1.40	1.55	1.40	1.55
Meta-phenylene-diamine 300 lb. bbls. lb.	.80	.84	.80	.84	.80	.84
Meta-toluene-diamine, 300 lb. bbls. lb.	.67	.69	.67	.69	.67	.69
Methanol, (Wood Alcohol)						
95% tanks. gal.	.33	.35	.33	.35	.33	.37
97% tanks. gal.	.34	.39	.34	.39	.34	.43
Pure, Synthetic drums cars gal.	.39½	.41½	.39½	.41½	.39½	.42½
Synthetic tanks. gal.		.35½		.35½	.35½	.40½
Methyl Acetate, drums. gal.	.17	.17½	.17	.17½		Nom.
Acetone, drums. gal.	.47	.49	.47	.55	50	.70
Anthraquinone. lb.	.85	.95	.85	.95	.85	.95
Cellosolve, (See Ethylene Glycol Mono Methyl Ether)						
Chloride, 90 lb cyl. lb.	.45	.45	.45	.45	.45	.45
Furoate, tech., 50 gal. dr. lb.		.50		50		50
Mica, dry grd. bags wks. lb.	65.00	80.00	65.00	80.00	65.00	80.00
Michler's Ketone, kegs. lb.		3.00		3.00		3.00
Monochlorobenzene, drums see, Chlorobenzene, mono. lb.						
Monomethylparaminosulfate 100 lb drums. lb.	3.75	4.00	3.75	4.00	3.75	4.00
Montan Wax, crude, bags. lb.	.05	.06	.05	.07	.05½	.07
Myrobalans 25%, liq bbls. lb.	.03¾	.04¼	.03¾	.04¼	.03¾	.04¼
50% Solid, 50 lb boxes. lb.	.05	.05¾	.05	.05¾	.05	.05¾
J1 bags. ton	34.00	35.00	34.00	35.00	34.00	35.00
J2 bags. ton		18.50	15.25	18.50	15.50	22.50
R2 bags. ton		18.00	14.75	17.50	16.00	20.00
Naphtha, v.m.& p. (deodorized) tanks. gal.	.09½	.10	.09½	.10		
Naphthalene balls, 250 lb bbls wks. lb.		.05½	.03¾	.05½	.03¾	.04¼
Crushed, chipped bgs wks. lb.		.04½		.04½		.04
Flakes, 175 lb bbls wks. lb.		.04½	.03¾	.04¼		.03¾
Nickel Chloride, bbls kegs. lb.	.18	.20	.18	.20	.18	.21
Oxide, 100 lb kegs NY. lb.	.35	.37	.35	.40	.37	.40
Salt bbl. 400 bbls lb NY. lb.	.11	.13	.10½	.13	.10½	.13
Single, 400 lb bbls NY. lb.	.11	.12	.10½	.12	.10½	.12
Metal ingot. lb.	.35	.35	.35	.35	.35	
Nicotine, free 40%, 8 lb tins, cases. lb.	1.25	1.30	1.25	1.30	1.25	1.30
Sulfate, 10 lb tins. lb.	.88½	.90	.88½	1.20	.98½	1.20
Nitre Cake, bulk. ton	10.00	12.00	10.00	12.00	12.00	14.00
Nitrobenzene, redistilled, 1000 lb drs wks. lb.	.09	.09½	.09	.09½	.09	.09½
Nitrocellulose, c-l-l-cl, wks. lb.	.25	.36	.25	.36	.25	.36
Nitrogenous Material, bulk unit	1.45	1.50	1.35	1.55	1.50	2.70
Nitronaphthalene, 550 lb bbls. lb.		.25		.25		.25
Nitrotoluene, 1000 lb drs wks. lb.	.14	.15	.14	.15	.14	.15
Nutgalls Aleppy, bags. lb.		.18		.18	.16	.18
Chinese, bags. lb.	.17	.18	.17	.18	.17	.18

	Current Market	1932 Low	1932 High	1931 Low	1931 High
Oak Bark, ground. ton	30.00	35.00	30.00	35.00	30.00 35.00
Whole. ton	20.00	23.00	20.00	23.00	20.00 23.00
Orange-Mineral, 1100 lb casks NY. lb.		.10¾	.09½	.10¾	.10½ .13
Orthoaminophenol, 50 lb kgs. lb.	2.15	2.25	2.15	2.25	2.15 2.25
Orthoanisidine, 100 lb drs. lb.	2.50	2.60	2.50	2.60	2.50 2.60
Orthochlorophenol, drums. lb.	.50	.65	.50	.65	.50 .65
Orthocresol, drums. lb.	.13	.15	.13	.22	.18 .25
Orthodichlorobenzene, 1000 lb. drums. lb.	.07	.10	.07	.10	.07 .10
Orthonitrochlorobenzene, 1200 lb drs wks. lb.	.28	.29	.28	.29	.28 .33
Orthonitrotoluene, 1000 lb drs wk. lb.	.16	.18	.16	.18	.16 .18
Orthonitrophenol, 350 lb dr. lb.	.85	.90	.85	.90	.85 .90
Orthotoluidine, 350 lb bbl lc-l lb.	.20	.22	.20	.22	.25 .30
Orthonitroparachlorphenol, tins lb.	.70	.75	.70	.75	.70 .75
Osage Orange, crystals. lb.	.16	.17	.16	.17	.16 .17
51 deg. liquid. lb.	.06	.06½	.06	.07½	.07 .07½
Powdered. 100 lb bags. lb.	.14½	.15	.14½	.15	.14½ .15
Paraffin, refd, 200 lb cs slabs					
123-127 deg. M. P. lb.	.02¾	.03	.02¾	.03	.03¼ .03
128-132 deg. M. P. lb.	.03½	.03¾		.03¾	.03¾ .03¾
133-137 deg. M. P. lb.	.04	.04¼	.04	.04¼	.04¾ .04¾
Para Aldehyde, 110-55 gal drs. lb.	.20½	.23	.20½	.23	.20½ .23
Aminoacetanilid, 100 lb bg. lb.	.52	.60	.52	.60	.52 .60
Aminohydrochloride, 100 lb. kegs. lb.	1.25	1.30	1.25	1.30	1.25 1.30
Aminophenol, 100 lb kgs. lb.	.78	.80	.78	.80	.82 .86
Chlorophenol, drums. lb.	.50	.65	.50	.65	.50 .65
Coumarone, 330 lb drums. lb.					
Cymene, refd, 110 gal dr. gal.	2.25	2.50	2.25	2.50	2.25 2.50
Dichlorobenzene, 150 lb bbls wks. lb.	.15½	.16	.15½	.16	.15½ .20
Nitroacetanilid, 300 lb bbls. lb.	.45	.52	.45	.52	.45 .55
Nitroaniline, 300 lb bbls wks lb.	.48	.55	.48	.55	.48 .55
Nitrochlorobenzene, 1200 lb drs wks. lb.	.23	.26	.23	.26	.23 .26
Nitro-orthotoluidine, 300 lb. bbls. lb.	2.75	2.85	2.75	2.85	2.75 2.85
Nitrophenol 185 lb bbls. lb.	.45	.50	.45	.50	.45 .50
Nitrosodimethylaniline, 120 lb. bbls. lb.	.92	.94	.92	.94	.92 .94
Nitrotoluene, 350 lb bbls. lb.	.29	.31	.29	.31	.29 .31
Phenylenediamine, 350 lb bbls lb.	1.15	1.20	1.15	1.20	1.15 1.20
Toluenesulfonamide, 175 lb bbls. lb.	.70	.75	.70	.75	.70 .75
Toluenesulfonchloride, 410 lb bbls wks. lb.	.20	.22	.20	.22	.20 .22
Toluidine, 350 lb bbls wk. lb.	.42	.43	.42	.43	.40 .44
Paris Green, Arsenic Basis					
100 lb kegs. lb.		.24	.24	.27	.27
250 lb kegs. lb.		.23	.23	.25	.25 .26
Persian Berry Ext., bbls. lb.	.25	Nom	.25	Nom.	.25 Nom.
Pentasol (see Alcohol, Amyl)					
Pentasol Acetate (see Amyl Acetate)					
Petrolatum, Green, 300 lb bbl. lb.	.02	.02½	.02	.02½	.02 .02½
Phenol, 250-100 lb drums. lb.	.14½	.15	.14½	.15	.14½ .15
Phenyl-Alpha-Naphthylamine, 100 lb kegs. lb.		1.35		1.35	1.35
Phenylhydrazine Hydrochloride lb.	2.90	3.00	2.90	3.00	2.90 3.00

Phosphate

Phosphate Acid (see Superphosphate)						
Phosphate Rock, f.o.b. mines						
Florida Pebble, 68% basis. ton	3.10	3.25	3.10	3.25	3.10	3.25
70% basis. ton	3.75	3.90	3.75	3.90	3.75	3.90
72% basis. ton	4.25	4.35	4.25	4.35	4.25	4.35
75-74% basis. ton	5.25	5.50	5.25	5.50	5.25	5.50
75% basis. ton		5.75		5.75		5.75
77-80% basis. ton		6.25		6.25		6.25
Tennessee, 72% basis. ton		5.00		5.00		5.00
Phosphorous Oxychloride 175 lb cyl. lb.	.18	.20	.18	.20	.18	.20
Red, 110 lb cases. lb.	.43	.46	.43	.46	.42	.46
Yellow, 110 lb cases wks. lb.	.27½	.32	.27½	.37½	.31	.37½
Sesquisulfide, 100 lb cs. lb.	.38	.44	.38	.44	.38	.44
Trichloride, cylinders. lb.	.18	.20	.18	.20	.18	.20
Phthalic Anhydride, 100 lb bbls wks. lb.	.15	.16	.15	.16	.15	.16
Pigments Metallic, Red or brown bags, bbls, Pa. wks. ton	37.00	45.00	37.00	45.00	37.00	45.00
Pine Oil, 55 gal drums or bbls						
Destructive dist. lb.	.59	.62	.59	.63	.61	.64
Prime bbls. bbl.	8.00	10.60	8.00	10.60	8.00	10.60
Steam dist. bbls. gal.	.59	.62	.54	.61	.54	.70
Pitch Hardwood wks. ton	20.00	25.00	20.00	35.00	5.00	45.00
Plaster Paris, tech, 250 lb bbls bbl.	3.30	3.50	3.30	3.50	3.30	3.50
Platinum, Refined. oz.	37.50	38.00	37.50	38.00	38.00	38.00
Pontol, tanks. per gal.		.54	.54	.54		

Wm. S. Gray & Co.

342 MADISON AVENUE, NEW YORK

Telephone VAnderbilt 3-0500 - - Cable Graylime

METHANOL

all grades

METHYL ACETONE

METSO

SODIUM METASILICATE SPEEDS UP

Industrial Cleaning . . . . . .

METSO is full of active alkali that removes grease, oil and dirt quickly, and yet has an emergency brake—inhibiting action.

A comparison is convincing. If you have a cleaning problem, study the characteristics of this unique alkali, METSO. Our Technical Dept. will be pleased to assist you in any way.

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SULPHUR

99½% Pure

Your business is solicited whether of carload or cargo quantities.

TEXAS GULF SULPHUR CO.
75 E. 45th Street New York City
Mines: Gulf, Newgulf and Long Point, Texas

U.S. POTASH

K_2O

25% MIN.

Our mines at Carlsbad, New Mexico, are now producing Manure Salts which are being used with entire satisfaction by manufacturers.

Write us regarding your Potash requirements. Let us send you samples and answer your inquiries.

UNITED STATES POTASH CO.
342 Madison Ave., New York

	Current Market	1932 Low	1932 High	1931 Low	1931 High
Potash, Caustic, wks, solid...lb.	.06½	.06½	.06½	.06½	.06½
flake...lb.	.0705	.08	.0705	.08	.0705	.08
Potash Salts, Rough Kainit 12.4% basis bulk...ton	.....	9.20	.....	9.20	.....	9.20
14% basis...ton	.....	9.70	.....	9.70	.....	9.70
Manure Salts...						
20% basis bulk...ton	.....	12.00	12.00	12.65	.....	12.65
30% basis bulk...ton	.....	19.15	.....	19.15	.....	19.15
Potassium Acetate...lb.	.27	.28	.27	.28	.27	.30
Potassium Muriate, 80% basis bags...ton	.....	37.15	.....	37.15	.....	37.15
Pot. & Mag. Sulfate, 48% basis bags...ton	.....	27.80	.....	27.80	.....	27.80
Potassium Sulfate, 90% basis bags...ton	....	47.50	47.50	48.25	....	48.25
Potassium Bicarbonate, USP, 320 lb bbls...lb.	.07½	.09	.07½	.09	.07½	.10
Bichromate Crystals, 725 lb casks...lb.	.08	.08½	.08	.08½	.08	.09
Powd., 725 lb cks wks...lb.	.13	.13¼	.13	13¼	.13	.13
Binoxalate, 300 lb bbls...lb.	.14	.17	.14	.17	.14	.17
Bisulfate, 100 lb kegs...lb.	.16	.30	.16	.30	.16	.30
Carbonate, 80-85% calc. 800 lb casks...lb.	.....	.05	.0475	.05	.04½	.07½
Chlorate crystals, powder 112 lb keg wks...lb.	.08	.08½	.08	.08½	.08	.08½
Chloride, crys bbls...lb.	.04	.04¾	.04	.04¾	.04	.06
Chromate, kegs...lb.	.23	.28	.23	.28	.23	.28
Cyanide, 110 lb. cases...lb.	.50	.57½	.50	.57½	.55	.57½
Metabisulfite, 300 lb. bbl...lb.	.10½	.11	.10½	.13	.11	.13
Oxalate, bbls...lb.	.16	.24	.16	.24	.20	.24
Perchlorate, casks wks...lb.	.09	.11	.09	.11	.09	.12
Permanganate, USP, crys 500 & 100 lb drs wks...lb.	.16	.16½	.16	.16½	.16	.16½
Prussiate, red, 112 lb keg...lb.	.....	.38½	.....	.38½	.35	.40
Yellow, 500 lb casks...lb.	.16½	.17	.16½	.21	.18½	.21
Tartrate Neut, 100 lb keg...lb.	.....	.21	.....	.21	.....	.21
Titanium Oxalate, 200 lb bbls ...lb.	.21	.23	.21	.23	.21	.23
Propane, group 3, tanks...	.....	.07	.....	.....	.....	.....
Propyl Furoate, 1 lb tins...lb.	.....	5.00	.....	5.00	.....	5.00
Pumice Stone, lump bags...lb.	.04	.05	.04	.05	.04	.05
250 lb bbls...lb.	.04½	.06	.04½	.06	.04½	.06
Powdered, 350 lb bags...lb.	.02½	.03	.02½	.03	.02½	03
Putty, commercial, tube..100 lb.	2.00	2.25	2.00	2.45	2.35	2.45
Linseed Oil, kegs...100 lb.	3.40	3.50	3.40	4.75	4.00	4.75
Pyridine, 50 gal drums ...gal.	.85	.95	.85	1.25	1.50	1.75
Pyrites, Spanish cif Atlantic ports bulk...unit	.12	.13	.12	.13	.12	.13¾
Quebracho, 35% liquid tks...lb.	.02	.02½	.02	.03	.02½	.04
450 lb bbls c-1...lb.	.02½	.02¾	.02½	.03¾	.03¼	.03¾
35% Bleaching, 450 lb bbl..lb.	.04	.05¼	.04	.05¼	.04	.05¼
Solid, 63%, 100 lb bales cif..lb.	.02	.02½	.02	.02½	.02½	.05½
Clarified, 64%, bales...lb.	.02½	.03	.02½	.03½	.03½	.05½
Quercitron, 51 deg liquid 450 lb bbls ...lb.	.05½	.06	.05½	.06	.05½	.06
Solid, 100 lb boxes...lb.	.09½	.13	.09½	.13	.09½	.13
Bark, Rough...ton	.....	14.00	.....	14.00	.....	14.00
Ground...ton	34.00	35.00	34.00	35.00	34.00	35.00
R Salt, 250 lb bbls wks...lb.	.40	.44	.40	.44	.40	.44
Red Sanders Wood, grd bbls. lb.	.....	.18	.....	.18	.....	.18
Resorcinol Tech, cans...lb.	.65	.70	.65	.70	.65	1.25
Rosin Oil, 50 gal bbls, first run ...gal.	.42	.43	.41	.45	.47	.58
Second run...gal.	.45	.47	.45	.51	.51	.61

Rosin

Rosins 600 lb bbls 280 lb....unit ex. yard N. Y.					
B	3.65	3.00	3.65	3.25	4.95
D	3.75	3.15	3.75	3.35	5.50
E	3.90	3.37½	4.00	3.45	5.90
F	4.15	3.40	4.15	3.70	6.20
G	4.15	3.45	4.15	3.75	6.25
H	4.20	3.45	4.20	3.80	6.30
I	4.25	3.47½	4.25	3.85	6.35
K	4.62½	3.60	4.65	4.10	6.45
M	5.25	4.20	5.25	4.20	6.70
N	5.25	4.65	6.05	4.85	6.95
WG	5.90	5.25	6.45	6.15	8.15
WW	6.65	5.85	6.65	6.45	8.90
Rotten Stone, bags mines...ton	23.50	24.00	20.00	23.00	24.00	20.00
Lump, imported, bbls...lb.	.05	.07	.05	.07	.05	.07
Selected bbls...lb.	.09	.12	.09	12	.09	.12
Powdered, bbls...lb.	.02	.05	.02	.05	.02	.05
Sago Flour, 150 lb bags...lb.	.04½	.05	.04½	.05	.04½	.05
Sal Soda, bbls wks...100 lb.	.90	1.00	.90	1.00	.....	1.00
Salt Cake, 94-96% c-1 wks...ton	13.00	14.00	13.00	15.50	14.00	19.00
Chrome...ton	12.00	13.00	12.00	14.50	13.00	17.00
Saltpetre, double refd granular 450-500 lb bbls...lb.	.06	.06¾	.06	.06¾	.06	.06¾
Satin, White, 500 lb bbls...lb.	.....	.01½	.....	.01½	.....	01½
Shellac Bone dry bbls...lb.	.18	.19	.16	.26	.26	.29
Garnet, bags...lb.	.15	.16	.15	.20	.19	.26
Superfine, bags...lb.	.12½	.12¾	.10	.14	.16	.22
T. N. bags...lb.	.11½	.12	.09	.13	.14½	.17
Schaeffer's Salt kegs...lb.	.48	.50	.48	.50	.53	.57
Silica, Crude, bulk mines...ton	8.00	11.00	8.00	11.00	8.00	11.00
Refined, floated bags...ton	22.00	30.00	22.00	30.00	22.00	30.00
Air floated bags...ton	.....	32.00	.....	32.00	.....	32.00
Extra floated bags...ton	30.00	35.00	30.00	40.00	32.00	40.00
Soapstone, Powdered, bags f.o.b. mines...ton	15.00	22.00	15.00	22.00	15.00	22.00

Soda

Soda Ash, 58% dense, bags c-1 wks...100 lb.	1.17½	.....	1.17½	.....	1.17½
58% light, bags...100 lb.	1.15	.....	1.15	.....	1.15
Contract, bags c-1 wks..100 lb.	1.15	.....	1.15	1.15	1.15
Soda Caustic, 76% grnd & flake drums...100 lb.	2.90	.....	2.90	.....	2.90
76% solid drs...100 lb.	2.50	.....	2.50	.....	2.50
Sodium Acetate, tech....450 lb. bbls wks...lb.	.05	.04½	.05	.04½	.06
Arsenate, drums...lb.	.25	.35	.25	.35	.25	.35
Arsenite, drums...gal.	.50	.75	.50	.75	.50	.75
Bicarb, 400 lb bbl.....100 lb.	.....	2.25	.....	2.25	2.35	2.35
Bichromate, 500 lb cks wks lb.	.05	.05½	.05	.05½	.05	.07½
Bisulfite, 500 lb bbl wks....lb.	.....	.04	.....	.04	.....	.04
Chlorate, wks...lb.	.05½	.07¾	.05¼	.07¾	.05½	.07¾
Chloride, technical...ton	12.00	13.00	12.00	13.00	12.00	13.00
Cyanide, 96-98%, 100 & 250 lb drums wks...lb.	.15½	.16	.15½	.17	.16	.17
Fluoride, 300 lb bbls wks....lb.	.07	.07½	.07	.07½	.07	.08½
Hydrosulfite, 200 lb bbls f.o.b. wks...lb.	.22	.24	.22	.24	.22	.24
Hypochloride solution, 100 lb. cbys...lb.	.....	.05	.....	.05	.....	.05
Hyposulfite, tech, pea cyrs 375 lb bbls wks.....100 lb.	2.40	3.00	2.40	3.00	2.40	3.00
Technical, regular crystals 375 lb bbls wks.....100 lb.	2.40	2.65	2.40	2.65	2.40	2.65
Metanilate, 150 lb bbls....lb.	.44	.45	.44	.45	.44	.45
Metasilicate, c-1, wks..100 lb.	2.85	3.25	2.85	4.00	.....	4.00
Monohydrate, bbls...lb.	.....	.02½	.....	.02½	.....	.02½
Naphthionate, 300 lb bbl...lb.	.52	.54	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb. bags c-1 NY .....100 lb.	.....	1.21	1.185	1.73½	1.73½	2.07
Nitrite, 500 lb bbls spot....lb.	.07½	.08	.07½	.08	.07½	.08
Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb.	.25	.27	.25	.27	.25	.27
Perborate, 275 lb bbls.....lb.	.17	.19	.17	.20	.18	.20
Phosphate, di-sodium, tech. 310 lb bbls.....100 lb.	2.40	2.50	2.40	2.75	2.50	3.00
tri-sodium, tech, 325 lb bbls...100 lb.	.....	3.20	.....	3.20	3.15	3.50
Picramate, 160 lb kegs ....lb.	.69	.72	.69	.72	.69	.72
Prussiate, Yellow, 350 lb bbl wks...lb.	.11½	.12	.11½	.12	.11½	.12
Pyrophosphate, 100 lb keg..lb.	.15	.20	.15	.20	.15	.20
Silicate, 60 deg 55 gal drs, wks ...100 lb.	1.65	1.70	1.65	1.70	1.65	1.70
40 deg 55 gal drs, wks ...100 lb.	.....	.75	.....	.75	.75	1.00
Silicofluoride, 450 lb bbls NY ...lb.	.06	.06½	.05½	.06¾	.04	.04½
Stannate, 100 lb drums.....lb.	....	.18½	.17	.19	.18	.26
Stearate, bbls...lb.	.20	.25	20	.25	.20	.25
Sulfanilate, 400 lb bbls.....lb.	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-1 wks...lb.	.02	.02¾	.02	02¾	.02	.02¾
Sulfide, 80% crystals, 440 lb bbls wks...lb.	.02½	.02¾	.02½	.02¾	.02½	02¾
62% solid, 650 lb drums 1c-1 wks...lb.	.03	.03½	.03	.03½	.03	.03½
Sulfite, crystals, 400 lb bbls wks...lb.	.03	.03½	.03	.03½	.03	.03½
Sulfocyanide, bbls ....lb.	.28	.35	.28	.35	.28	.35
Tungstate, tech, crystals, kegs ...lb.	.60	.70	.60	.88	.80	.88
Solvent Naphtha, tanks... wks...gal.	.26	.28	.26	.28	24	38
Spruce, 25% liquid, bbls .....lb.	.....	.01¼	.....	.01	.01	.01¼
25% liquid, tanks wks.....lb.	.....	.01	.....	.01	.....	.01
50% powd, 100 lb bag wks..lb.	.02	.02¼	.02	.02¼	.02	.02¼
Starch, powd, 140 lb bags ...100 lb.	2.34	2.44	2.34	2.67	2.57	3.20
Pearl, 140 lb bags.....100 lb.	2.54	2.64	2.54	2.84	2.57	3.00
Potato, 200 lb bags...lb.	.03¾	.04	.03¾	.06	.05½	.06
Imported bags...lb.	.04¾	.05	04	.06½	.05¾	.06½
Soluble...lb.	.08	.08½	.08	.08½	.08	.08½
Rice, 200 lb bbls...lb.	.07½	.08½	.07½	.10	.09	.10
Wheat, thick bags...lb.	.06	.06½	.06	.07	.06½	.07
Thin bags...lb.	.09½	.10	.09½	.10	.09½	.10
Strontium carbonate, 600 lb bbls wks...lb.	.07½	.07½	.07½	.07½	.07½	07½
Nitrate, 600 lb bbls NY....lb.	.07	.07½	.07	.07½	.07	.09½
Peroxide, 100 lb drs...lb.	.....	1.25	.....	1.25	.....	1.25
Sulfur Brimstone, broken rock, 250 lb bag c-1.....100 lb.	.....	2.05	.....	2.05	.....	2.05
Crude, f. o. b. mines.....ton	18.00	19.00	18.00	19.00	18.00	19.00
Flour for dusting 99½%, 100 lb bags c-1 NY....100 lb.	.....	2.40	.....	2.40	.....	2.40
Heavy bags c-1.....100 lb.	.....	2.50	.....	2.50	.....	2.50
Flowers, 100%, 155 lb bbls c-1 NY...100 lb.	.....	3.45	...	3.45	.....	3.45
Roll, bbls 1c-1 NY....100 lb.	2.65	2.85	2.65	2.85	2.65	2.85
Sulfur Chloride, red, 700 lb drs wks...lb.	.05	.05½	.05	.05½	.05	.05½
Yellow, 700 lb drs wks.....lb.	.03½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl....lb.	.07	.07½	.07	.07½	.07	.07½
Extra, dry, 100 lb cyl.....lb	.10	.12	.10	.12	.10	.12
Sulfuryl Chloride...lb.	.15	.40	.15	.40	.15	.40

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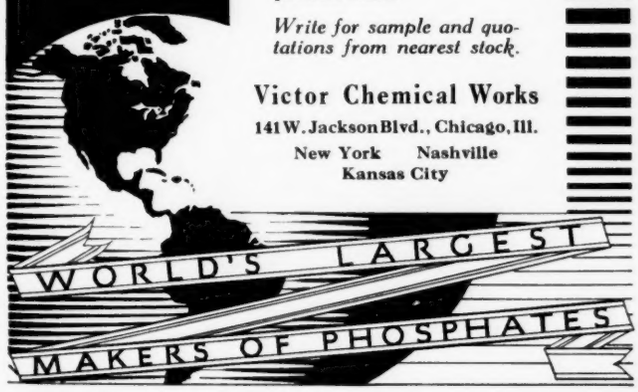

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Prices Current

Talc
Whale Oil

	Current Market	1932 Low	1932 High	1931 Low	1931 High
Talc, Crude, 100 lb bgs NY..ton	12.00	15.00	12.00	15.00	12.00	15.00
Refined, 100 lb bgs NY..ton	16.00	18.00	16.00	18.00	16.00	18.00
French, 220 lb bags NY....ton	18.00	22.00	18.00	22.00	18.00	22.00
Refined, white, bags....ton	35.00	40.00	35.00	40.00	35.00	40.00
Italian, 220 lb bags NY...ton	40.00	50.00	40.00	50.00	40.00	50.00
Refined, white bags.....ton	50.00	55.00	50.00	55.00	50.00	55.00
Superphosphate, 16% bulk, wks.....ton	.....	.....	7.50	8.00	7.50	9.00
Triple bulk, wks.....unit	.65	.....	.65	.....	.65	
Tankage Ground NY.....unit	1.50*	1.30	1.50	1.50	3.20	
High grade f.o.b. Chicago.unit	1.25	1.50	1.80	1.50	3.25	
South American cif.....unit	2.00	2.00	2.25	2.25	3.40	
Tapioca Flour, high grade bgs..lb	.03½	.05	.03½	.05	.03½	.05
Medium grade, bags.....lb.	.03	.04	.03	04	.03	.04
Tar Acid Oil, 15%, drums...gal.	.21	.22	.21	.22	.21	.25
25% drums.....gal.	.23	.24	.23	.24	.23	.28
Terra Alba Amer. No. 1, bgs or bbls mills.....100 lb.	1.15	1.75	1.15	1.75	1.15	1.75
No. 2 bags or bbls...100 lb.	1.50	2.00	1.50	2.00	1.50	2.00
Imported bags.....lb.	.01¼	.01¼	.01¼	.01¼	.01¼	.01¼
Tetrachlorethane, 50 gal dr...lb.	.08	.09	.08	.09½	.09	.09½
Tetralene, 50 gal drs wks.....lb.	.12	.13	.12	.20	.....	.20
Thiocarbanilid, 170 lb bbl....lb.	.25	.28½	.25	.28½	.25	.28½
Tin.....						
Crystals, 500 lb bbls wks...lb.	.....	.25	.22	.25	.23	.28½
Metal Straits NY.....lb.	.....	.24½	.211	.24½	.21¾	.27
Oxide, 300 lb bbls wks.....lb.	.....	.26½	.23	.26½	.23	.29
Tetrachloride, 100 lb drs wks .....lb.	.....	.1735	.1465	.1735	.1605	.19½
Titanium Dioxide 300 lb bbl...lb.	.17¼	.19½	.17¼	.21	.20½	.22
Calcium Pigment, bbls.....lb.	.06¼	.06½	.06¼	.07¼	.06½	.07¼
Toluene, 110 gal drs.....gal.	.....	.35	.....	.35	.34	.35
8000 gal tank cars wks....gal.	.....	.30	.....	.30	.27	.30
Toluidine, 350 lb bbls.....lb.	.88	.89	.88	.89	.88	.94
Mixed, 900 lb drs wks.....lb.	.27	.32	.27	.32	.27	.32
Toner Lithol, red, bbls.....lb.	.90	.95	.90	.95	.90	.95
Para, red, bbls.....lb.	.....	.80	.....	.80	.....	.80
Toluidine.....lb.	1.50	1.55	1.50	1.55	1.50	1.55
Triacetin, 50 gal drs wks.....lb.	.32	.36	.32	.36	.32	.36
Trichlorethylene, 50 gal dr...lb.	.10	.10½	.10	.10½	.10	.10½
Triethanolamine, 50 gal drs...lb.	.40	.42	.40	.42	.40	.42
Tricresyl Phosphate, drs.....lb.	.25½	.26	.25½	.26	.26	.45
Triphenyl guanidine.....lb.	.58	.60	.58	.60	.58	.60
Phosphate, drums.....lb.	.50	.65	.50	.65	.50	.70
Tripoli, 500 lb bbls.....100 lb.	.75	2.00	.75	2.00	.75	2.00

*&10

	Current Market	1932 Low	1932 High	1931 Low	1931 High
Tungsten, Wolframite..per unit	10.40	11.00	10.40	11.75	11.00	11.75
Turpentine carlots, bbls.....gal.	.....	.46¾	.39	.47¾	.36¼	.57
Wood Steam dist, bbls....gal.	.....	.46	.42	.46	.38	.61
Urea, pure, 112 lb cases.....lb.	.15	.17	.15	.17	.15	.17
Fert. grade, bags c.i.f.....ton	.....	82.60	.....	82.60	.....	82.60
c. i. f. S. points.....ton	.....	82.60	.....	82.60	.....	82.60
Valonia Beard, 42%, tannin bags.....ton	30.00	30.50	29.50	34.00	33.00	40.00
Cups, 30-31% tannin.....ton	22.50	23.50	22.50	23.50	22.50	25.00
Mixture, bark, bags.....ton	23.00	24.00	23.00	26.00	25.00	31.00
Vermillion, English, kegs.....lb.	1.28	1.40	1.28	1.80	1.53	1.80
Vinyl Chloride, 16 lb cyl.....lb.	.....	1.00	.....	1.00	.....	1.00
Wattle Bark, bags.....ton	.....	29.00	26.00	33.00	32.00	41.00
Extract 55%, double bags ex-dock.....lb.	.05	.06½	.05	.06½	.05	.06½
Whiting, 200 lb bags, c-1 wks .....100 lb.	.85	1.00	.85	1.00	.85	1.00
Alba, bags c-1 NY.....ton	.....	13.00	.....	13.00	.....	13.00
Gilders, bags c-1 NY...100 lb.	.....	1.35	.....	1.35	.....	1.35
Xylene, 10 deg tanks wks...gal.	.....	.29	.....	.29	.....	.29
Commercial, tanks wks...gal.	.....	.26	.....	.26	.24	.30
Xylidine, crude.....lb.	.36	.37	.36	.37	.36	.37
Zinc Ammonium Chloride powd., 400 lb bbls.....lb.	.05	.05½	.....	5.75	5.25	5.75
Carbonate Tech. bbls NY..lb.	.09½	.11	.09½	.11	.10½	.11
Chloride Fused, 600 lb drs wks.....lb.	.05	.05¾	.05	.06	.05¾	.06
Gran, 500 lb bbls wks.....lb.	.05¾	.06	.05¾	.06	.05¾	.06
Soln 50%, tanks wks...100 lb.	2.25	3.00	2.25	3.00	2.25	3.00
Cyanide, 100 lb drums.....lb.	.38	.39	.38	.39	.38	.39
Dithiofuroate, 100 lb dr....lb.	.....	1.00	.....	1.00	.....	1.00
Dust, 500 lb bbls c-1 wks...lb.	.....	.0435	.041	.0525	.0515	.07
Metal, high grade slabs c-1 NY.....100 lb.	.....	3.52	2.87	3.52	3.50	4.45
Oxide, American bags wk...lb.	.....	.05¾	.0485	.07	.06½	.07
French, 300 lb bbls wks...lb.	.08¾	.11¾	.08¾	.11¾	.09¾	.11¾
Perborate, 100 lb drs.....lb.	.....	1.25	.....	1.25	.....	1.25
Peroxide, 100 lb drs.....lb.	.....	1.25	.....	1.25	.....	1.25
Stearate, 50 lb bbls.....lb.	.16	.17	.16	.22	.18½	.23
Sulfate, 400 bbl wks.....lb.	.03	.03¼	.03	.03½	.03	.03½
Sulfide, 500 lb bbls.....lb.	.12	.13	.12	.13½	.13	16½
Sulfocarbolate, 100 lb keg..lb.	.21	.22	.21	.24	.22	.30
Zirconium Oxide, Nat. kegs...lb.	.02½	.03	.02½	.03	.02½	.03
Pure kegs.....lb.	.45	.50	.45	.50	.45	.50
Semi-refined kegs.....lb.	.08	.10	.08	.10	.08	.10

Oils and Fats

Castor, No. 1, 400 lb bbls....lb.	.09½	.09¾	.09½	.10¼	.10	.12
No. 3, 400 lb bbls.....lb.	.09	.09½	.09	.10½	.09½	.11¾
Blown, 400 lb bbls.....lb.	.11¼	.11½	.11½	.12½	.12½	.14
China Wood, bbls spot NY...lb.	.....	.06	.05¾	.07¾	.07	.07¾
Tanks, spot NY.....lb.	.....	.05½	.05	.06¾	.06	.07
Coast, tanks.....lb.	.....	.05¾	.04½	.06½	.05½	.06½
Coconut, edible, bbls NY....lb.	.....	.10¾	.....	.10¾	.....	.10¾
Ceylon, 375 lb bbls NY....lb.	.04½	.04¾	.04½	.04¾	.03¾	.06½
8000 gal tanks NY.....lb.	.03¾	.03½	.03¾	.03¾	.03¾	.06
Cochin, 375 lb bbls NY....lb.	.04¾	.05	.04¾	.06	.05½	.07
TanksN Y.....lb.	.03½	.04	.03½	.05	.04¾	.05¾
Manila, bbls NY.....lb.	.04½	.05	.04½	.05	.04¾	.07
Tanks NY.....lb.	.03¾	.03¾	.03¾	.04	.03¾	.05½
Tanks, Pacific Coast.....lb.	.03½	.03½	.02¾	.03½	.03	05
Cod, Newfoundland, 50 gal bbls .....gal.	.23	.26	.21	.30	.26	.48
Cod Liver see Chemicals.....						
Copra, bags, N. Y.....lb.	.....	.0207	.0195	.0235	.0195	.0325
Corn, crude, bbls NY.....lb.	.....	.05	.04½	.09	.05½	.09
Tanks, mills.....lb.	.....	.04½	.02¾	.04½	.03¾	.07½
Refined, 375 lb bbls NY...lb.	.05½	.06	.05½	.07	.06¾	.10½
Tanks.....lb.	.05	.05½	.05	.08¾	.08	.08¾
Cottonseed, crude, mill.....lb.	.....	.04½	.02¾	.04½	.03	.07
Degras, American, 50 gal bbls NY.....lb.	.02½	.03	.02½	.04	.03½	.04½
English, brown, bbls NY...lb.	.02¾	.03½	.02¾	.04	.03¾	.05
Light, bbls NY.....lb.	.04	.04½	.04	.04½	.04	.05½
Dog Fish, Coast Tanks.....gal.	.....	.32	.....	.32	.....	32
Greases, Brown.....lb.	.....	.02½	.01¾	.02½	.02	.04½
Yellow.....lb.	.....	.02½	.01¾	.03	.02	.05
White, choice bbls NY.....lb.	.04	.04½	.02	.04½	.03½	.05¾
Herring, Coast, Tanks.....gal.	.....	Nom.	.....	Nom.	.....	Nom.
Horse, bbls.....lb.	.05½	Nom.	.05½	Nom.	.05½	Nom.
Lard Oil, edible, prime.....lb.	.....	.09	.08½	.10	.10¼	.13
Extra, bbls.....lb.	.....	.07¾	.05¾	.07¼	.07	.10
Extra No. 1, bbls.....lb.	.....	.06½	.05½	.07	.06½	.09¼
Linseed, Raw, five bbl lots...lb.	.....	.069	.061	.074	.077	.102
Bbls c-1 spot.....lb.	.061	.062	.053	.066	.069	.098
Tanks.....lb.	.05½	.05¾	.047	.06	.063	.092
Menhaden Tanks, Baltimore.gal.	.10½	.11	.10½	.20	.14	.22
Extra, bleached, bbls NY..gal.	.36	.37	.36	.40	.38	.53
Light, pressed, bbls NY...gal.	.27½	.28	.25	.34	.33	.38
Yellow, bleached, bbls NY.gal.	.30½	.31	.30½	.37	.30	.42
Mineral Oil, white, 50 gal bbls .....gal.	.40	.60	.40	.60	.40	.60
Russian, gal.....gal.	.95	1.00	.95	1.00	.95	1.00
Neatsfoot, CT, 20° bbls NY...lb.	.11¾	.12	.11½	.13½	.13½	.16
Extra, bbls NY.....lb.	.....	.06¾	.05¾	.07	.07	.10
Pure, bbls NY.....lb.	.....	.08	.07¾	.09	.09½	.12
Oleo, No. 1, bbls NY.....lb.	.....	.06½	.05¾	.07	.06½	.08
No. 2, bbls NY.....lb.	.....	.05½	.04¾	.06	.05½	.08
No. 3, bbls NY.....lb.	.....	.06¼	.....	.06¼	.06½	.09
Olive, denatured, bbls NY...gal.	.57	.58	.55	.65	.59	.80
Edible, bbls NY.....gal.	1.50	1.60	1.50	2.00	1.50	2.00
Foots, bbls NY.....lb.	.....	.04¾	.04½	.05	.04½	.06½
Palm, Kernel Casks.....lb.	.03½	.04	.035	.04¾	.04½	.06½
Lagos, 1500 lb casks.....lb.	.03¼	.03½	.03¼	.05	.04	.06
Niger, Casks.....lb.	.....	.03½	.03	.03½	.03½	.05½
Peanut, crude, bbls NY.....lb.	.03¾	.04	.02½	.04½	.03½	.05
Refined, bbls NY.....lb.	.08¼	.08¾	.08¼	.09	.08½	.14
Perilla, bbls NY.....lb.	.....	.04½	.03¾	.05¾	.05½	.11
Tanks, Coast.....lb.	.....	.04	.03½	.05	.05	.09
Poppyseed, bbls NY.....gal.	1.60	1.70	1.60	1.75	1.70	1.75
Rapeseed, in bond, bbls NY.gal.	.....	.32	.....	.....	.....	.....
denatured, drms, NY.....gal.	.35	.36	.....	.....	.....	.....
Red, Distilled, bbls.....lb.	.06½	.06¾	.06½	.07	.07¼	.09
Tanks.....lb.	.05¾	.06	.05¾	.06	.06½	.08½
Salmon, Coast, 8000 gal tks.gal.	.15	.19	.15	.19	.19	.22
Sardine, Pacific Coast tks...gal.	.14	.15	.14	.17½	.17	.19
Sesame, edible, yellow, dos...lb.	.08½	.09	.08½	.09	.08½	.10¼
White, dos.....lb.	.10	.11	.10	.11	.10	.12
Sod, bbls NY.....gal.	.....	.40	.....	.40	.....	.40
Soy Bean, crude.....						
Pacific Coast.....lb.	.032	.035	.02¾	.03½	.03¼	.08
Domestic tanks, f. o. b. mills, ...lb.	.032	.035	.03	.032	.032	.07
Crude, bbls NY.....lb.	.....	.04	.03¾	.05	.04¼	.08
Tanks NY.....lb.	.....	.03½	.03¼	.04½	.04¼	.08
Refined, bbls NY.....lb.	.04¼	.05¼	.045	.06	.058	.09
Sperm, 38° CT, bleached, bbls NY.....gal.	.68	.70	.68	.70	.68	.85
45° CT, bleached, bbls NY.gal.	.63	.65	.63	.65	.63	.80
Stearic Acid, double pressed dist bags.....lb.	.....	.08	.07½	.09	.08½	.11
Double pressed saponified bags .....lb.	.08	.08¼	.07	.08¼	.08	.12
Triple, pressed dist bags..lb.	.....	.10¼	.10½	.11	.11	.14
Stearine, Oleo, bbls.....lb.	.....	.06	.03¾	.06	.05½	.08¼
Tallow City, extra loose.....lb.	.....	.03¾	.02½	.03¾	.02½	.04
Edible, tierces.....lb.	.....	.04¼	.03¾	.04½	.03¾	.06
Tallow Oil, Bbls, c-1 NY...lb.	.05¾	.06	.05¾	.07½	.07	.08¾
Acidless, tanks NY.....lb.	.07¼	.09	.07¼	.09	.07¼	.09
Vegetable. Coast mats.....lb.	.06	Nom.	.06	Nom.	.06½	Nom.
Turkey Red, single bbls.....lb.	.07	.09	.07	.09	.07	.10
Double, bbls.....lb.	.09	.11	.09	.11	.09	.10
Whale, bleached winter, bbls NY.....gal.	.....	.74	.....	.74	.....	.74
Extra, bleached, bbls NY..gal.	.51	.52	.51	.60	.58	77½
Nat. winter, bbls NY.....gal.	.45	.46	.45	.55	.53	.72

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SILICATE . . Physically
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4 FACTORIES 4 BETTER SERVICE

"We"—Editorially Speaking

A member of the senior class of a well-known School of Business Administration has been looking over the industrial field this summer, preparatory to opening sealed bids for his services on June 10, 1933. He came away from a paper mill, duly impressed with the chemistry involved in its operations and the mysteries of alkalinity. "Why," he exclaimed, "the whole thing depends on Ph. D. control!" And very largely, it does.

"We Congratulate"—the new Editor of *The Percolator*.

And we protest that he should insult his fellow members by asking right out on the Bulletin whether any "think in private." Possibly he is excusable on the grounds of the stenographic error of a "t-h" that should be a "d-r." Incidentally, "we" have been accused of writing two of three anonymous contributions to the Lounge Forum, and are torn between the perfectly natural instinct to deny everything, and the timely desire to get all the credit possible.

Each month we read over our issues of ten years ago, culling the events of then, that seem significant or amusing today; and we are continually inspired by this periodic reminder of how vastly chemical industry advertising has improved in the past ten years. We like to think we have had a hand in this, but largely, so we must admit, it has been the helping hand of those advertising agents who have brought modern technique and real merchandising ideas into what used to be the drab "calling cards" which used to be the *beau ideal* of chemical announcements. These thoughts were again brought to mind by the following words of G. D. Crain, Jr., who said recently in *Class and Industrial Marketing*:—

"Advertising agencies are vitally interested in industrial advertising. They are supplying a professional service which adds to the quality of the advertising, and which should make it more valuable to the advertisers. They are making the pages of business publications more attractive because of the expert handling of the text, layouts and illustrations for these advertisements. This will reflect the demand for advertising which will pay its way—advertising which will have a definite sales value, and which will be recognized as pointing the way to sales just as directly and definitely as personal sales efforts do. That kind of advertising does not just happen. It is based on intelligent study of marketing needs, and on expert production of advertisements, all fitted into a definite program built around the special characteristics of the product and the market. Because advertising agencies can supply a great deal of expert talent for the hard jobs of marketing to which advertising is so well adapted, their activities in the industrial advertising field are to be welcomed and encouraged."

The well known depression has certainly created some problems, but it has also solved at least one. Adequate parking space at the plant for employees' cars, is not at the moment one of the worries of the management.

And right in the same vein—isn't it too bad the depression can't be talked to death?

The last salesman's golf tournament attracted fifty-seven, of which fifty-six were found late at the bar trying to sign up the magician on the theory that if he could read the minds of purchasing agents as well as he performed on salesmen he might help to get an order.

C. L. Mantell's paper on the electrochemical industries was read before the Electrochemical Society at Cleveland, September 22nd.

Next Month

One Chemical Union—

We talk of one big chemical trade association—the British have one, and Davidson Pratt tells how and why.

Shop Rights—

Unless you want to be wrong about the protection you enjoy under foreign patents, you must understand what a shop right means abroad.

Saving Steam—

Back pressure and extraction steam engines explained in terms of dollars and cents.

AIRPLANE PLANT VIEWS—above left—General Aniline Works, Grasselli, New Jersey; Below A. A. C., Carteret, N. J. Right page above, Hooker Electrochemical at Tacoma, Washington; below Merrimac at Everett, Mass., and Mathieson at Niagara Falls, N. Y.

Legislative measures which add to government waste—particularly those pertaining to Veterans relief—are being constructively dealt with by the National Economy League of which Admiral Byrd is Chairman. You will be interested in the figures given in his article in this issue abstracted from the *Manufacturers' Record*. Perhaps you will even decide to become a member of the League and fight the good fight.

Chemical manufacturers must get a grim laugh out of the news items about "Quality Week" instituted recently by several of the leading N. Y. City dry goods stores. In most lines when prices fall, inferior products are the usual result. Have you heard of a wave of inferior ash, ammonia, acetone or chlorine? No, we guess not!

The interesting statistics on silver in this issue were compiled by Charles White Merrill, geologist and mineral economist, assisted by the staff of the Common Metals Division of the Bureau of Mines.

The chemical salesmen proved to be above the moron class by wildly acclaiming, at the fourth golf tournament at Maplewood, some real honest-to-goodness entertainment that did not "shimmy." However, we have it on good authority that the Christmas party will positively not include a budding Tettrazini, "Roxy's" Quartette, and a magician.

Woad—the blue dye that made the Britons fearful to Caesar's legions—has this year, after more than twenty centuries, ceased to be a commercial crop in England. By a curious coincidence, at Coomenara, Ireland, under the auspices of the Free State Government, a demonstration has recently been staged of native vegetable dyes, and Mr. De Valera's active associates are planning an extensive "educational campaign" on the excellencies and advantages of natural dyestuffs. Who's loony now?

We wonder whether real beer served in Bakelite glasses over a dry ice bar by a robot barkeep will prove conductive to large consumption.

"DO ONE THING

AND DO IT WELL"

We esteem the architect because he knows his business thoroughly. He studies one subject . . . does one thing, and so he does it well.

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